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THE RCRA REGULATORY STATUS OF AIR BAG INFLATOR/MODULE UNITS

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EDUCATIONAL PAPER
ON
THE RCRA REGULATORY STATUS
OF
AIR BAG INFLATOR/MODULE UNITS

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**Prepared for
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EXECUTIVE SUMMARY

With the dramatic increase in the use of air bag inflator/module units ("inflator/module units") in passenger cars and light truck vehicles, the regulatory status of discarded inflator/module units under the federal Resource Conservation and Recovery Act ("RCRA")¹ has become an increasingly important environmental issue for the motor vehicle industry.² Motor vehicle suppliers and manufacturers, dealers, dismantlers, scrap processors, recyclers and others have inquired whether, by handling scrap inflator units, they will become subject to hazardous waste management regulatory requirements imposed under Subtitle C of RCRA and what they must do to remain in full compliance with applicable environmental laws and regulations.

This paper analyzes whether air bag inflator/module units should be regulated under Subtitle C of RCRA, which regulates the handling, transport, management and recycling of hazardous wastes.³ Based on prior regulatory determinations by the U.S. Environmental Protection Agency ("EPA"), the paper concludes that it is necessary to focus upon the characteristics of the inflator/module unit as a whole unit, rather than its separate

¹ 42 U.S.C. §§ 6901 et seq.

² For purposes of this paper, inflator/module units and air bag systems are meant to include designs based on electromechanical and all-mechanical crash sensing systems.

³ It is important to note that this paper focuses solely on federal RCRA regulatory issues relating to air bag inflator/module units. However, the states are authorized under RCRA to adopt their own hazardous waste regulatory requirements as long as they are no less stringent than the corresponding federal RCRA requirements.

constituents, in determining the RCRA regulatory status of these units.⁴ This approach is fully consistent with the way EPA has required waste generators to analyze other similar types of waste materials.

I. An Analysis of Whether an Air Bag Inflator/Module Unit Is a RCRA Hazardous Waste When Discarded

RCRA establishes two categories of hazardous waste material that are subject to RCRA Subtitle C controls: (1) wastes which are specifically listed by EPA as hazardous, or "listed wastes," and (2) wastes which are hazardous because they exhibit any of four hazardous waste characteristics (ignitability, corrosivity, reactivity or toxicity), or "characteristic wastes."

For purposes of RCRA regulatory analysis, there are two classes of air bag inflator/module units that must be considered: undamaged and damaged units. Based on prior EPA regulatory guidance, this paper concludes that air bag inflator/module units should not be classified as a listed hazardous waste, regardless of whether these units are damaged or undamaged, even though sodium azide, one of the active ingredients in an inflator/module unit, is listed under RCRA as a hazardous constituent material.

⁴ The term "inflator unit" is normally used to refer to the metal housing (aluminum or steel) that encases the gas generant, whereas the term "module unit" is normally used to refer to the inflator unit, the steel and plastic case of a unit, and the cushion. Since it is reasonable to conclude that inflators and inflator and module units generally will be handled under common federal regulatory interpretations, this paper will address both inflator and module units together in discussing applicable RCRA regulatory requirements. Where RCRA regulatory factors may affect air bag inflator and module units differently, these factors will be specifically addressed.

With respect to RCRA characteristic hazardous waste issues, this paper concludes that undamaged air bag inflator/module units, both deployed (i.e., activated) and undeployed, do not exhibit hazardous characteristic properties that would warrant regulation under RCRA Subtitle C when these units are discarded. Of the various types of characteristic hazardous waste categories, only one category - reactive wastes - is potentially relevant to an analysis of inflator/module units. Given currently available technical information, undamaged units, when analyzed as a whole unit, are neither explosive (including U.S. Department of Transportation ("DOT") Class B explosive) wastes nor water reactive wastes under RCRA Subtitle C.

Moreover, the most reasonable, supportable position is that deployed units, both undamaged and damaged, should not be categorized as characteristic hazardous wastes, when discarded, for the following reasons: (1) EPA has explicitly stated in several prior regulatory determinations that these units should not be subject to RCRA Subtitle C requirements; (2) prior EPA regulatory guidance indicates that motor vehicle and air bag inflator/module unit manufacturers would "know" if their waste materials were reactive and would therefore affirmatively use appropriate waste management procedures if they were necessary; (3) because of the inherent technical difficulties in performing reactivity testing under EPA's existing regulatory guidance, any current test data generated under this regulatory guidance would be meaningless; and (4) EPA, itself, has recognized the inherent technical issues in applying its regulatory guidance for

Full document details: SAE CRP-005

reactivity testing and has not, as of this date, promulgated regulations clarifying when a waste should be classified as a hazardous waste because of its reactive characteristics.⁵

Finally, damaged, undeployed air bag inflator/module units should not be regulated as a hazardous waste under RCRA Subtitle C when these units are recycled.⁶ These units can be safely and effectively recycled, and would presumably fall within several categories of materials that are exempted from RCRA Subtitle C regulatory requirements when these materials are reclaimed.

II. An Analysis of How Air Bag Inflator/Module Units Should Be Handled and/or Managed in the Highly Unlikely Event That These Units Are Classified As RCRA Hazardous Wastes

As noted above, prior EPA regulatory interpretations indicate that undamaged air bag inflator/module units, both deployed and undeployed, and damaged deployed units, should not be subject to RCRA Subtitle C waste management requirements when these units are discarded. Undeployed, damaged units also should not be subject to RCRA Subtitle C controls when these units are recycled. Nevertheless, in the highly unlikely event that these units became subject to RCRA Subtitle C controls, generators, recyclers, transporters, and owners/operators of treatment,

⁵ Obviously, only those units that contain sulfur compounds in their system could trigger sulfide-reactive characteristic waste issues.

⁶ The removal of undeployed inflator units from automobiles is not recommended by motor vehicle and air bag system manufacturers. Due to rugged construction required to contain deployment forces and withstand crash damage, it is very unlikely that a damaged air bag inflator/module unit would ever be found in commerce.

storage and disposal facilities handling and/or managing these units would be subject to the following regulatory requirements.

A. Generators

If, in the highly unlikely event, inflator/module units are deemed to be hazardous wastes for purposes of EPA regulation, RCRA would impose comprehensive waste management requirements on any party (except conditionally exempt small quantity generators) who was categorized as a generator of that waste. Under these improbable circumstances, air bag inflator/module unit and motor vehicle manufacturers, automobile dealerships, service and maintenance shops, automobile dismantlers, automobile scrap processors, and possibly other parties in the industry chain (perhaps even including the automobile owner), could be deemed waste generators for purposes of RCRA when they discard inflator units, send them off-site for recycling, or store them in preparation for either discarding or recycling. Generators would be subject to certain waste handling, manifesting, reporting and recordkeeping requirements depending upon whether they are large, small or conditionally exempt small quantity generators.

RCRA allows generators under the 90-day accumulation rule to accumulate and treat hazardous wastes on-site for up to 90 days under certain conditions without requiring them to obtain a RCRA storage or treatment permit.⁷ Under EPA regulations, if by deploying the unit in accordance with the requirements of this

⁷ Under the RCRA accumulation rule, these facilities could accumulate hazardous wastes on-site for up to 180 days without a RCRA permit if they were a small quantity generator.

90-day accumulation rule, a generator eliminated the hazardous waste characteristic of that unit (and complied with other relevant RCRA notification requirements), that waste material would then become exempt from further regulation under RCRA Subtitle C.

The recycling of discarded units offers many potential benefits in terms of recovering significant quantities of aluminum and stainless steel for reuse. Under RCRA Subtitle C, certain categories of hazardous wastes are exempt or excluded from regulation when they are recycled. Subtitle C, for example, specifically exempts reclaimed scrap metal from stringent RCRA Subtitle C controls. Inflator/module units, when considered as a whole unit (rather than as the sodium azide-containing gas generant material alone), would meet the definition of the term "scrap metal," as defined by EPA, and therefore would be eligible for the "scrap metal" recycling exemption under the RCRA Subtitle C regulations.

In addition, EPA's RCRA regulations exclude characteristic by-products of production activities from regulation when these materials are reclaimed on the grounds that these materials should not be defined as "solid wastes." Consistent with prior EPA regulatory determinations, both damaged and undamaged units would be classified under certain circumstances as by-products when reclaimed and thus excluded from RCRA regulatory requirements. This determination presents further support, in addition to the scrap metal approach outlined above, for

concluding that inflator/module units are not subject to RCRA Subtitle C controls when they are recycled.

B. Transporters

In addition to generator requirements, RCRA imposes stringent recordkeeping and hauling requirements on transporters of hazardous wastes (except for those transporters handling wastes from conditionally exempt small quantity generators). Should inflator/module units be classified as hazardous wastes, any parties which transported these units would be subject to RCRA transport requirements, unless the inflator units were exempted or excluded from regulation because they were being reclaimed as noted above.⁸

C. Owners/Operators of Treatment, Storage and Disposal Facilities

Finally, RCRA imposes very burdensome and complex regulations upon facilities which treat, store or dispose of hazardous wastes ("TSD facilities"), including the requirement to obtain a RCRA permit. There are a variety of possible parties (e.g., automobile dismantlers, scrap processors, and recyclers, or even automobile dealers or other automobile service operators) who may potentially be designated as owners/operators of TSD facilities by treating or storing inflator/module units in the highly unlikely case that these units are categorized as hazardous waste. Treatment is broadly defined under the RCRA

⁸ As noted above, this paper concludes that it is highly unlikely that these units would be subject to RCRA Subtitle C controls.

regulations as "any process which alters the physical, chemical, or biological character of a waste to render it safer, more amenable to recovery, transport, storage or disposal." Thus, consistent with this broad view of what constitutes "treatment" under RCRA, dismantling facilities could potentially be classified as TSD facilities if they deployed inflator/module units prior to dismantling, since the deployment process would result in the physical and chemical alteration of the sodium azide-containing gas generants in an inflator/module unit and might be viewed as "treatment."

Similarly, in addition to any other potentially applicable RCRA requirements due to the facility's processing of other scrap materials, scrap processing facilities could potentially be classified as TSD facilities if their operations were involved with, or led to the deployment of, inflator/module units as part of their automobile shredding activities. These facilities could be classified as TSD facilities if they stored discarded inflator/module units on-site for more than 90 days, or otherwise violated the on-site storage rules (unless they were conditionally exempt small generators).

D. Recyclers

As for recycling operations, several entities are considering the construction and operation of recycling facilities aimed at recovering the aluminum and stainless steel from deployed inflator/module units. These units contain a significant amount of recoverable metals -- one proposed

recycling facility would have the capacity to recover approximately two million pounds of aluminum annually. As noted above, inflator/module units which are recycled should be considered as scrap metal material, i.e., discarded materials composed of more than 50% metal, which is currently exempt from RCRA hazardous waste management requirements.

Moreover, even if inflator/module units are not classified as scrap metal, undeployed units, both damaged and undamaged, should be exempt from all RCRA regulatory controls because they would not be defined as solid/hazardous waste under the RCRA regulations when recycled. Thus, recyclers who reclaim inflator units would be exempt from all RCRA Subtitle C regulatory requirements applicable to owners/operators of TSD facilities and would not be required to obtain a RCRA treatment permit.⁹

Finally, the actual resource recovery process itself would be exempt from regulation under the RCRA regulatory exemption known as the "on-site" recycling exemption. Given current RCRA interpretations of what constitutes a "facility," a metal recovery furnace and a discharge structure which is located adjacent to that furnace would be considered as part of the same recycling facility and therefore covered by this exemption.

⁹ As noted previously, this paper focuses solely on the RCRA regulatory status of air bag inflator/module units under applicable federal requirements. However, it is important to stress that states are authorized under RCRA to adopt hazardous waste management requirements that are more stringent than applicable federal requirements. Thus, in order to determine fully how these units should be handled in any particular state when they are being reclaimed, it is necessary to consider any additional RCRA requirements that had been adopted in that state over and above the applicable federal requirements.

Thus, this facility would be exempt from RCRA permitting requirements. However, even under this RCRA exemption, any storage of hazardous wastes prior to recycling would still be subject to full RCRA permitting requirements for storage facilities.

III. Conclusion

In conclusion, prior EPA regulatory determinations indicate that undamaged units, both deployed and undeployed, do not exhibit hazardous waste characteristics that would subject them to RCRA Subtitle C controls. In responding to requests for clarification, EPA has explicitly stated that deployed air bag inflator/module units should not be subject to RCRA Subtitle C requirements. Further, damaged units should not be regulated as solid/hazardous waste under RCRA Subtitle C when these units are recycled.

In spite of these clear EPA precedents, several state agencies have taken informal (or non-binding) positions which have created confusion and uncertainty on how air bag inflator/module units should be regulated under RCRA. Although the weight of prior EPA interpretations is quite persuasive, clarification that air bag inflator/module units are not subject to RCRA Subtitle C would encourage and facilitate the proper handling, management and recycling of these units.

There have been a number of recent federal legislative and regulatory initiatives that could affect the future regulatory status of air bag inflator units under RCRA. For example,

Congress is currently considering a RCRA reauthorization bill that may address a number of Subtitle C and Subtitle D (relating to non-hazardous solid wastes) regulatory matters. Moreover, EPA has previously indicated that it may, at some point in the future, propose a rulemaking aimed at: (1) amending the definition of "solid waste" as used in the RCRA hazardous waste regulations, and (2) encouraging the recycling of hazardous secondary materials. Although it is unlikely that either of these two initiatives will be finalized in the near future, they could, if adopted, have significant impacts on the RCRA regulatory status of air bag inflator/module units.

**EDUCATIONAL PAPER: THE REGULATORY STATUS OF
AIR BAG INFLATOR/MODULE UNITS UNDER RCRA SUBTITLE C¹**

PART I. INTRODUCTION

With the dramatic increase in the use of air bag inflator/module units in passenger cars and light truck vehicles, the regulatory status of discarded inflator/module units under the federal Resource Conservation and Recovery Act ("RCRA")² has become an increasingly important environmental issue for the motor vehicle industry.³ Motor vehicle suppliers and manufacturers, dealers, dismantlers, scrap processors, recyclers and others have inquired whether, by handling scrap inflator units, they will become subject to hazardous waste management regulatory requirements imposed under Subtitle C of RCRA and what they must do to remain in full compliance with applicable environmental laws and regulations.

Air bag inflator/module unit manufacturers and motor vehicle manufacturers believe that these units should be managed as nonhazardous waste when they are discarded and are currently

¹ This paper was prepared under a research contract with SAE International ("SAE"). The twelve companies who funded this cooperative research project are: Automotive Systems Laboratory, Inc.; Allied-Signal Inc. - Bendix Safety Restraints Group; Breed Automotive Corporation; Chrysler Corporation; Ford Motor Company; General Motors Corporation - GMC Inland Fisher Guide Division; Mercedes-Benz of North America, Inc.; Morton International; Takata Inc.; TRW Vehicle Safety Systems Inc.; Volkswagen of America, Inc.; and Honda of America Manufacturing, Inc.

² 42 U.S.C. §§ 6901 et seq.

³ For purposes of this paper, inflator modules/units and air bag systems are meant to include designs based on electromechanical and all-mechanical crash sensing systems.

handling them accordingly. However, recent informal and/or non-binding state regulatory interpretations have caused concern that these units would be subject to many unnecessary and quite burdensome regulatory requirements, and have cast some uncertainty over the RCRA regulatory status of these units. For example, various manufacturers of air bag inflator units have submitted proposals to state environmental agencies to establish facilities for the deployment and reclamation of air bag inflator units. In response, these agencies have noted either informally or in non-binding opinions that these operations could possibly be subject to RCRA Subtitle C controls that may be neither warranted nor necessary, although the legal basis for these informal state opinions or statements does not appear valid or supportable based on current EPA regulatory determinations. No state, however, has issued a final regulatory opinion on the RCRA regulatory status of air bag systems as of the present date, and there is no indication that any state plans to issue any such formal decision in the near future.

This paper addresses the RCRA regulatory status of air bag inflator/module units from the perspective of all of the parties involved in the use and handling of these units. The first part of this paper analyzes whether inflator/module units would be considered RCRA hazardous wastes when they are discarded pursuant to applicable RCRA regulations. For purposes of analysis, this paper analyzes separately the regulatory status for undamaged and damaged units, the two possible classes of units that could be discarded.

The second part of this paper analyzes the RCRA regulatory requirements that would govern the use, handling, transport and management of discarded inflator units in the highly unlikely case that these units were classified as hazardous wastes under RCRA.⁴ It briefly reviews the RCRA requirements that might, under these highly unlikely circumstances, be applicable to inflator/module unit and motor vehicle manufacturers, dealers, dismantlers, scrap processors and other parties who might discard, transport, treat, recycle or dispose of either undeployed or deployed inflator/module units. It also examines whether, and under what circumstances, these parties would be exempt and/or excluded from various RCRA Subtitle C regulatory controls.

The final section of this paper discusses the current federal legislative and EPA regulatory developments relating to air bag inflator/module units and their impacts on the RCRA status of these units.

⁴ As noted above, this paper focuses exclusively on the regulatory status of air bag inflator/module units under RCRA. However, it is important to note that sodium azide has been designated as a hazardous substance under the federal Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), as amended, 42 U.S.C. §§ 9601 et seq.; 40 C.F.R. § 302.4. While a discussion of CERCLA liability is outside the scope of this paper, it should be noted that parties who dispose, or arrange for the disposal of, certain types of inflator/module units could conceivably be subject to CERCLA liability at some point in the future if these units are disposed of at a site that requires remediation under CERCLA.

**PART II. A DETERMINATION OF WHETHER AIR BAG
INFLATOR/MODULE UNITS ARE HAZARDOUS WASTES
UNDER RCRA SUBTITLE C**

A. Defining the Waste Unit

1. Introduction

The first question which must be addressed in determining the status of air bag inflator/module units under RCRA⁵ is the definition of the waste unit: should the waste unit be categorized for purposes of RCRA regulation as the entire air bag inflator/module unit (including both the metal canister and the chemical ingredients contained within the unit), or does it consist solely of the sodium azide-containing gas generants or the char residue remaining inside the canister when a unit is deployed?

For purposes of RCRA, the difference is quite significant. For waste characterization purposes, the entire inflator/module unit, including both the metal canister and the sodium azide-containing gas generants, would certainly be subject to different hazardous waste characteristic regulatory considerations than the sodium azide-containing gas generants alone. Moreover, the proper definition of the waste unit for waste characterization purposes is important in determining if that unit may fall within the scope of one of the exemptions from regulation provided under the RCRA Subtitle C regulations.

⁵ 42 U.S.C. §§ 6901 et seq.

EPA has not specifically addressed the question of whether to base the RCRA regulatory status of air bag inflator/module units on an analysis of the entire inflator/module unit as a whole or on an analysis solely of the chemical materials contained within the canister itself, i.e., the sodium azide-containing gas generants. Per 40 C.F.R. § 262.11, it is the waste generator's exclusive responsibility to properly characterize a given waste. In prior RCRA regulatory determinations, the Agency has, however, indicated that it is necessary to look at the entire waste unit as a whole rather than just the hazardous constituents contained within that unit, in order to determine if that waste material falls within the scope of RCRA Subtitle C regulation.

2. EPA Rules and Policy Statements

EPA, as noted above, has never explicitly addressed the question of whether, in the case of air bag inflator/module units, the "waste" consists of the entire unit or solely the sodium azide-containing gas generant material. However, in other contexts, the Agency has stated that the waste should be defined for purposes of regulatory analysis by reference to the entire object that the waste "generator" sends off-site for disposal or recycling. Applying this reasoning to inflator/module units, it would then appear that the waste material should be classified for purposes of RCRA as consisting of the entire inflator/module unit (including but not limited to both the metal canister and the sodium azide-containing gas generants).

Full document details: SAE CRP-005

In 1989, EPA examined the RCRA regulatory status of ignitron tubes containing mercury, which were being sent off-site for reclamation. EPA indicated that in order to determine the regulatory status of this waste material, it was necessary to consider the entire product that was being sent off-site rather than just the mercury or other potentially hazardous component of that product. In making this determination, the Agency stated:

In deciding the status of material being sent for reclamation, you have to look at what is actually physically being sent off site. In this case, it is the entire ignitron tube that is being sent off site. The purity of the mercury within the tube is not a consideration when determining whether the ignitron tube itself meets the definition of a spent material . . .

* * *

In summary, the ignitron tube is the material that becomes spent and thus, would be considered a spent material. The presence of mercury in the ignitron tube is not a consideration when defining the tube as a solid waste.⁶

There appears to be no reason why a similar conclusion should not be applied to a regulatory analysis of air bag inflator/module units. If EPA were to follow the same reasoning for these units that it did for ignitron tubes, then EPA would consider the entire inflator/module unit to be the waste, since it is the entire unit which is being "physically sent off-site."

In the same case, EPA also indicated that if the waste generator were to remove the mercury from the tube and then send

⁶ Letter from Stephen L. Cochran, Environmental Protection Specialist, Waste Characterization Branch, EPA, to Robert Oleszko, Vice President, HazMat Environmental Group, Inc., April 14, 1989.

only the mercury off-site, then the characteristics of the mercury could be examined separately.⁷ Applying this reasoning to inflator/module units, it would follow that the sodium azide-containing gas generant should not itself be considered the waste material for purposes of RCRA analysis when discarding an air bag inflator/module unit, unless the material were first physically removed from the unit and then separately sent off-site for disposal. However, it would appear that this situation would be unlikely to occur when handling inflator/module units. The design and construction of the inflator units (i.e., welded or otherwise securely contained) makes breaching of the canister and removal of the gas generant material almost impossible. Thus, few, if any, parties would actually try to physically remove this gas generant material from a metal canister inflator unit before sending a unit off-site for disposal.

EPA reached a similar conclusion in responding to an inquiry from a producer of printed circuit boards, consisting of copper plates coated with tin lead. EPA specifically stated that the circuit boards would have to be analyzed as a whole to determine if they should be treated as a RCRA Subtitle C hazardous waste, regardless of whether the boards contained a specific material, such as solder, that would itself constitute characteristic hazardous waste.⁸

⁷ Id.

⁸ Letter from Matthew Strauss, Chief, Waste Characterization Branch, EPA, to Gregg G. Frazier, Ozark Circuits, Inc. October 20, 1986.

Various other portions of the EPA hazardous waste regulations also suggest, although they do not explicitly state, that a RCRA regulatory determination should focus on the entire unit, rather than one potentially hazardous component, of a waste material. For example, in order to determine whether a particular waste material possesses one of four designated hazardous waste characteristics under the RCRA regulations, the RCRA regulations call for a waste generator to perform various tests using a "representative sample" of the waste. These regulations define a "representative sample" to mean:

a sample of a universe or whole (e.g., waste pile, lagoon, groundwater) which can be expected to exhibit the average properties of the universe or whole.⁹

The explicit direction in this regulation that the sample should reflect the "universe or whole" of the waste, rather than simply the hazardous constituents, is additional support for the position that an entire unit, and not its individual hazardous constituents, should be considered as the waste material when determining how to evaluate a material under RCRA.

In the specific context of reactive hazardous wastes, the hazardous waste characteristic most relevant to an analysis of air bag inflator/module units, EPA again provides an indication that any hazardous waste regulatory determination under RCRA should be based solely on the characteristics of the entire waste unit. In issuing its Phase I RCRA regulations in May 1980, EPA specifically rejected designating any one test as appropriate for

⁹ 40 C.F.R. § 260.10 (emphasis added).

testing the reactivity characteristics of a waste material because it found that no test measuring only samples of the waste could adequately "reflect the reactivity of the whole waste."¹⁰ This action, at least by implication, again indicates that the Agency would focus on the entire waste unit for purposes of RCRA waste characterization.

3. Conclusion

In conclusion, although EPA has not yet made a determination as to whether air bag inflator/module units specifically should be regulated as an entire unit, past interpretations by the Agency in related situations, combined with the plain language of applicable RCRA regulatory requirements, indicate that any determination on the RCRA regulatory status of these modules/units should be based on an analysis of the unit as a whole. As will be discussed below, this conclusion is obviously quite significant in determining if inflator units should be classified as hazardous waste for purposes of RCRA when these units are discarded.

In spite of these clear regulatory precedents, several state environmental agencies have issued either informal or non-binding positions which have created some confusion and uncertainty on how air bag inflator/module units should be regulated under RCRA Subtitle C. For example, the Utah State Bureau of Solid and Hazardous Waste has informally addressed the question of the RCRA status of an inflator unit, and suggested on various occasions

¹⁰ 45 Fed. Reg. 33,110 (May 19, 1980).

that it might arrive at a different regulatory interpretation under RCRA than might be inferred from prior EPA precedents.¹¹ In this case, a company has constructed a resource recovery facility to recycle inflator units for metals recovery. This facility includes both a deployment system and a resource recovery furnace to recover the aluminum and steel from the deployed inflator units. Undeployed units will first be deployed in the deployment system located next to the furnace. The deployed inflator units are then transferred to the furnace for melting and recovery of the aluminum and steel.¹² According to various projections, these recycling facilities could have the potential capacity to recover almost two million pounds of aluminum annually, as well as large quantities of stainless steel.

In commenting on this proposed recycling process, the Utah Bureau suggested in conversations that the deployment system might have to obtain a RCRA treatment permit prior to operation. In fact, this state agency even suggested, at least informally, that the entire recovery facility might be required to obtain a RCRA treatment permit, although this position does not appear supportable when compared to EPA's prior regulatory determinations. However, the Utah Bureau has not yet made a

¹¹ See infra page 71.

¹² The deployment of inflator units before they enter the furnace is necessary in order to avoid potential safety and health hazards that could arise from possible splashing of molten aluminum due to the nitrogen gas that would be released if these undeployed units were transported directly to the furnace and deployed in the furnace itself.

final determination on the RCRA regulatory status of this proposed recycling operation, and the recycler has submitted a lengthy statement supporting its view that this operation should not be subject to RCRA treatment permitting requirements.

Another state agency - the Arizona Department of Environmental Quality - has indicated that it will only determine whether undeployed inflator units constitute a RCRA hazardous waste after a recycler has actually submitted its plans to the state to construct and operate a resource recovery facility. Until it has approved these recycling plans, the state has indicated in a formal administrative order that all undeployed units recycled off-site may be disposed of as non-hazardous waste, but must be accompanied by a uniform hazardous waste manifest (EPA form 8700-22) and transported by a transporter possessing an EPA hazardous waste handler identification number.

It is important to note that as of the present date, no state has issued an official or binding position on the RCRA regulatory status of air bag inflator/module units. Nevertheless, recent state agency actions have caused confusion among the regulated community over how, if at all, air bag inflator/module units should be regulated. As a result, they suggest that the RCRA status of these units may even vary from state to state, causing significant regulatory inequities. Although the weight of prior EPA regulatory determinations is quite persuasive, clarification that air bag inflator/module units are not subject to RCRA Subtitle C would help facilitate a consistent regulatory policy across the U.S.

B. The Regulatory Status of Undeployed Air Bag Inflator/Module Units

For purposes of RCRA regulatory analysis, there are two classes of air bag inflator/module units that must be considered: undamaged and damaged units. In order to determine their RCRA regulatory status, both of these types of units must be analyzed in either an undeployed or deployed condition. These various conditions are analyzed below, focusing initially on undeployed units -- both undamaged and damaged -- and then deployed units.

1. An Analysis of Whether Undeployed Air Bag Inflator/Module Units Are Listed Hazardous Wastes

RCRA Subtitle C¹³ regulates the generation, transportation, treatment, storage and disposal of hazardous wastes. Under Subtitle C, there are two types of hazardous wastes: "listed" hazardous wastes and "characteristic" hazardous wastes. Any solid waste which is either a listed hazardous waste or a characteristic hazardous waste is subject to the hazardous waste regulations of RCRA Subtitle C, unless it falls within the scope of one of the various exemptions provided under RCRA.

A waste is considered to be a "listed" hazardous waste under RCRA if it falls under one of four "lists" of hazardous wastes specified in the RCRA Subtitle C regulations. These four lists are: (1) a list of certain waste materials generated from non-specific industrial processes, including spent solvents, by-products, and other wastes (known as "F-list" wastes, because EPA

¹³ 42 U.S.C. §§ 6921 et seq.

assigns each waste in this group a hazardous waste number beginning with the letter "F"); (2) a list of certain industry-specific wastes, including various by-products, sludges, and other wastes ("K-list wastes"); and (3) two separate lists of "discarded commercial chemical products," including discarded off-specification materials, container residues, and spill residues. The first of these two lists identifies commercial chemical products which are "acute hazardous wastes" when discarded ("P-list" wastes).¹⁴ The second list includes commercial chemical products which are "toxic wastes" when discarded ("U-list" wastes).¹⁵

Because EPA has included sodium azide on the list of discarded commercial chemical products contained in 40 C.F.R. § 261.33(e), this list is the only one that would be relevant to an analysis of whether air bag inflator/module units should be categorized as a "listed" hazardous waste under RCRA. However, even though these inflator/module units contain sodium azide as an active ingredient, an analysis of the applicable regulations and past EPA statements clearly indicates that air bag inflator/module units are not regulated as listed hazardous wastes.

¹⁴ 40 C.F.R. § 261.33(e). Off-specification species of these commercial chemical products, as well as spill and container residues from these commercial chemicals, also are included as listed wastes for both the U-list and P-list commercial chemical products.

¹⁵ 40 C.F.R. § 261.33(f).

Full document details: SAE CRP-005

The EPA regulations specify, in pertinent part, that the list of acute hazardous wastes includes any discarded material which is listed in 40 C.F.R. § 261.33(e) and is either:

- (1) [a] commercial chemical product or manufacturing chemical intermediate having the generic name [of sodium azide]; or
- (2) [an] off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name [of sodium azide].¹⁶

It is important to note that as part of this regulation, EPA has indicated that:

the phrase 'commercial chemical product or manufacturing chemical intermediate having the generic name [in question]' refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient."¹⁷

Thus, EPA has determined that only commercial chemical products which contain either commercially pure grade sodium azide and/or formulations in which sodium azide is the sole active ingredient should be considered to be listed hazardous wastes when discarded. By contrast, air bag inflator/module units contain multiple active ingredients, including various

¹⁶ 40 C.F.R. §§ 261.33(a) - (b).

¹⁷ 40 C.F.R. § 261.33 (bracketed comment following part (d)) (emphasis added). EPA has discussed the legal status of this comment, as follows: "The comment is in brackets and thus is not part of the regulations, but it conveys the intended meaning of the definition of commercial chemical products." EPA OSWER Directive 9443.09(84), Hazardous Waste Identification: Three Questions, November 29, 1984 ("EPA OSWER Dir. 9443.09(84)").

oxidizers as well as sodium azide. Thus, these units do not contain commercially pure grades of sodium azide or any other single compound, and therefore would not meet either of the RCRA criteria for "commercial chemical products."¹⁸ Accordingly, it is clear that air bag inflator/module units, when discarded, should not be regulated as a listed hazardous waste.¹⁹

EPA has already reached an identical conclusion in responding to a request from the Institute of Scrap Iron and Steel, Inc. ("ISIS") for a clarification of the RCRA status of inflator units. EPA stated that inflator units would not be a listed hazardous waste, even though sodium azide is a listed chemical product under RCRA, because commercial chemical products consisting of more than one active ingredient, such as the material in inflator units, do not meet the criteria for listed hazardous wastes:

[A Department of Transportation ("DOT") National Highway Transportation and Safety Administration ("NHTSA") report] explains that the gas generants consist mainly of sodium azide and oxidizers. . . . Page III-12 [of the report] explains that upon ignition, the solid propellant begins to burn, producing nitrogen gas that inflates the air bag. Based on this analysis of the mechanics of air bag deployment, the sodium azide containing initiator would not be regulated as a commercial chemical product regulated by the hazardous waste regulations of the Environmental Protection Agency. EPA

¹⁸ This information is based on the Material Safety Data Sheets provided by various suppliers of air bag inflator units.

¹⁹ EPA once proposed regulations, on April 30, 1985, which would have regulated spent chemical solvent mixtures as well as chemicals with only a single active ingredient. 50 Fed. Reg. 18,377-18,381 (April 30, 1985). However, these rules have never been finalized by EPA.

regulates commercial chemicals which are pure or technical grade and formulations in which the chemical is the sole active ingredient. Air bag propellant cartridges contain, as active ingredients, both sodium azide and oxidizers. The gas is generated through the action of both materials. Thus, the Resource Conservation and Recovery Act would not define the sodium azide in air bag canisters of obsolete automobile hulks as a listed hazardous waste.²⁰

This EPA letter further stated that "the sodium azide that is in inflator units would not be subject to RCRA regulation as a hazardous waste because it is not a sole active ingredient."²¹

Other EPA regulatory guidance support the conclusion that undeployed inflator units would not be regulated under the listed commercial chemical products category of RCRA hazardous wastes. For example, when the Agency initially promulgated its rules defining hazardous wastes in 1980, the Agency stated that "manufactured articles" such as batteries and mercury vapor lights would not be regulated as hazardous wastes when discarded even if they contained chemicals that were listed under the commercial chemical products waste category:

EPA intends that the materials listed in § 261.33 include only those commercial chemical products and manufacturing chemical intermediates that are known by the generic name of the chemicals listed in paragraphs (e) and (f) of that section. Manufactured articles that contain any of the chemicals listed in paragraphs (e) and (f) are rarely,

²⁰ EPA OSWER Directive 9441.02, Exclusion of Sodium Azide in Air Bag Canisters of Obsolete Automobile Hulls from RCRA Regulations, January 16, 1985 ("EPA Air Bag Inflator Unit Directive") (emphasis added); see also Letter from Jack W. McGraw, EPA Acting Assistant Administrator, to Mr. Herschel Cutler, Executive Director, ISIS, January 16, 1985, at 2.

²¹ Id. at 2-3.

if ever, known by the generic name of the chemical(s) they contain and therefore, are not covered by the § 261.33 listings.²²

Similarly, it appears that other manufactured products such as air bag inflator/module units should not be regulated as listed hazardous wastes under RCRA Subtitle C even if they contain commercial chemical products such as sodium azide which, if discarded in its pure form, would have been deemed to be listed hazardous wastes. Air bag inflator/module units, like the batteries and mercury vapor lights referred to by EPA, are manufactured articles which are "rarely, if ever, known by the generic name of the chemical they contain (i.e., sodium azide)." Consistent with EPA's prior regulatory determinations, inflator/module units should be viewed as manufactured articles and should not be classified as commercial chemical products when discarded. Therefore, this determination provides an additional basis for the conclusion that the units should not be regulated as listed hazardous wastes under RCRA Subtitle C.²³

²² 45 Fed. Reg. 78,541 (November 25, 1980) (emphasis added).

²³ EPA has reaffirmed, on several occasions, its position that the phrase "discarded commercial chemical products" refers only to products which are commercially pure chemicals or chemicals which contain one chemical as the sole active ingredient. For instance, an EPA OSWER directive explained that a waste potato starch which contained formaldehyde, a listed hazardous waste, would not be regulated as a commercial chemical product because the formaldehyde was not the sole active ingredient. EPA OSWER Dir. 9443.09(84). EPA also has indicated that chemical solvent mixtures are not considered commercial chemical products, because they do not contain the technical grade or pure form of any one chemical solvent. EPA OSWER Directive 9441.06(84), Regulatory Status of Mixtures of Spent Solvents - F001-F005, April 10, 1984.

2. **An Analysis of Whether Undeployed,
Undamaged Air Bag Inflator/Module Units
Should Be Classified As Characteristic
Hazardous Wastes Under RCRA**

The EPA regulations define a waste material as a characteristic hazardous waste if it exhibits any of the following four waste characteristics: ignitability, corrosivity, toxicity, or reactivity.²⁴ Of these, only "reactivity" is relevant to an analysis of the RCRA regulatory status of air bag inflator/module units.²⁵

²⁴ 40 C.F.R. §§ 261.10 - 261.24.

²⁵ A waste is considered ignitable if:

- (1) it is a liquid with a flash point less than 60 degrees Celsius (excluding aqueous solutions containing less than 24 percent alcohol);
- (2) it is a non-liquid capable of causing fire through friction or absorption of moisture under standard temperature and pressure;
- (3) it is an ignitable compressed gas as defined by the Department of Transportation ("DOT") regulations; or
- (4) it is an oxidizer as defined by DOT regulations.

40 C.F.R. § 261.21.

A waste is considered corrosive if:

- (1) it is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5; or
- (2) it is a liquid capable of corroding steel at a rate greater than 6.35 mm/year at 55 degrees Celsius as determined by certain specified test methods.

(continued...)

a. Summary of Reactive Hazardous Wastes

EPA considers a waste to be hazardous for the characteristic of reactivity if a representative sample of the waste fits one of the following general category descriptions: reactive cyanides, explosives, water reactive wastes, reactive sulfides, and other reactives.²⁶ The EPA regulations do not specify any test or

²⁵ (...continued)
 40 C.F.R. § 261.22.

A waste is considered toxic if it exhibits a potential to release any of 39 toxic constituents, including heavy metal, organic, or pesticide compounds above certain concentrations, as determined by a test known as the "Toxicity Characteristic Leaching Procedure." EPA designed this test to simulate the potential for wastes to leach into groundwater when disposed of together with other wastes in a municipal landfill. 40 C.F.R. § 261.24.

²⁶ 40 C.F.R. § 261.23. EPA has specifically defined a reactive hazardous waste as any solid waste which 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 a danger to human health or the environment;
- (5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment;
- (6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;

(continued...)

numerical standard by which a generator can objectively measure whether or not a waste is reactive, nor has the Agency established any numerical standard for determining if a waste is reactive. Rather, the regulations contain prose descriptions for defining each of the sub-categories of reactive wastes. If a particular waste fits any of these prose descriptions, then it is a reactive waste.

Even though EPA has not acted to adopt a specific numerical standard for determining reactivity, the Agency has acknowledged that standardized tests or numerical standards might provide a more objective basis for determining whether a waste meets a threshold for reactivity.²⁷ However, the Agency has indicated that it has been unable to determine a precise test for determining reactive wastes at the present time:

no test is sufficiently general to even begin to measure the variety of different stresses and reactions found within the reactive classification . . . [B]ecause the reactivity of a waste sample is a function not just of its intensive properties such as density and composition but also of its

²⁶(...continued)

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature or pressure; or

(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.

40 C.F.R. § 261.23.

²⁷ In fact, EPA's regulations for the other three hazardous waste characteristics of ignitability, corrosivity, and toxicity, do contain specific tests and numerical standards for determining if a waste is hazardous.