

**COMMENTS OF
PRBA – THE RECHARGEABLE BATTERY ASSOCIATION
ON**

**RIN 2137-AE44, “HAZARDOUS MATERIALS: TRANSPORTATION OF
LITHIUM BATTERIES”**

Docket No. PHMSA-2009-0095 (HM-224F)

**Notice of Proposed Rulemaking
75 Fed. Reg. 1302 (Jan. 11, 2010)**

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INTRODUCTION AND SUMMARY

PRBA – The Rechargeable Battery Association (“PRBA”) urges that the Pipeline and Hazardous Materials Safety Administration (“PHMSA” or “Agency”) set aside all portions of this proposed rule (the “proposal”)^a not identical to the lithium ion battery regulations that have been adopted by the International Civil Aviation Organization (“ICAO”) and most of the world’s aviation authorities and adopt the ICAO regulations in its place. Promulgation of the proposal would impose annual direct costs on the U.S. economy in excess of \$1 billion – which, at present value, totals more than \$8.5 billion over the next decade.^b Yet the simple fact of the matter is that billions of lithium ion cells and batteries have been shipped by air over the past decade, many repeatedly, *without a single fire on an aircraft attributable to lithium ion cells, batteries, or the products into which they are incorporated where existing U.S. regulations (much less the more stringent ICAO regulations) were complied with.* Only by bringing U.S. regulations up to the current international standards will PHMSA be taking appropriate, legally sustainable action.

The proposal conflates different concerns that arise from the transportation of lithium metal and lithium ion batteries which, in fact, are two entirely different technologies. As cargo, lithium ion batteries (a subset of which are “lithium polymer” batteries) present miniscule fire initiation risk, and – as testing by the Federal Aviation Administration (“FAA”) and others consistently has shown – no greater fire propagation risk than many other materials carried as air cargo every day. Proponents of the proposed rule have only been able to make their case by obfuscating the difference between lithium metal primary batteries and the very different lithium ion secondary batteries, and by exaggerating the risk of a fire-initiating short circuit in a laptop

^a 75 Fed. Reg. 1302 (Jan. 11, 2010).

^b Exhibit 2, Tables 2-1 and 2-2.

computer or other device carried aboard an aircraft by a passenger – a situation that is not only highly unlikely but, in any event, would not be addressed at all by this proposal.

At the same time, PHMSA’s analysis of the potential economic implications of the regulatory changes it has proposed is extraordinarily deficient. A major effect of this rule will be to impose new requirements on the shipping of hundreds of millions of electronic devices, but the Agency’s analysis does even not address that issue. Absent significant changes to aircraft loading procedures, the rule would also dramatically shrink the capacity on cargo aircraft available for the transport of lithium ion cells and batteries. This would force manufacturers to redesign their sophisticated product supply chains to rely more on ocean transport of cells and batteries, which in turn would lead to costlier and higher inventory levels and a loss of U.S. jobs. None of these costs is reflected in PHMSA’s regulatory analysis.

As to impacts it does recognize, PHMSA’s analysis gets cost estimates grossly wrong. It also disregards the direct costs of packaging and handling products as “Class 9” hazardous materials; fails to recognize (much less evaluate) the societal costs of diverting business from American air carriers, terminals and merchandisers; ignores the disruption of the just-in-time distribution practices that are the backbone of the American economy and the used battery recycling programs that have been mandated by many states; and ignores the proposed rule’s potential to frustrate the development of the very batteries the Federal government is spending hundreds of millions of dollars to promote as the vehicle power source of the future.

As noted above, there has *never* been a fire on an aircraft attributable to lithium ion cells, batteries, or the products into which they are incorporated where existing regulations were complied with. Equally important, authoritative testing by the FAA and other entities confirms

that the presence of these products in a cargo hold where a fire starts will not exacerbate that fire or hinder a response. Notably, although alarmists rushed to judgment after a fire in 2006 on a United Parcel Service (“UPS”) cargo plane and asserted it must have been caused by some kind of battery, an exhaustive investigation by the NTSB failed to support that conclusion.

Nor do the purported risks of transporting lithium ion batteries by ground or sea justify the enormous burden PHMSA seeks to put on manufacturers, distributors, retailers, and recyclers to provide training to hundreds of thousands of workers on the complex provisions of hazmat transportation regulations. Moreover, in addition to delaying distribution and production and increasing the cost of new products, promulgation of the rules as proposed would create a conflict with environmental and recycling regulations and would eviscerate, and likely force the closing of, the world’s most successful manufacturer product stewardship program, the Rechargeable Battery Recycling Corporation’s nationwide Call2Recycle® program.

The comments that follow are presented in three sections and two exhibits. The first section, immediately following this introduction and the table of contents, provides a policy-level summary of the views of the 93 members of PRBA and the other associations and companies who are endorsing these views in their own comments. The second section provides a question-by-question response to the issues raised by PHMSA in the proposal’s preamble. The third section provides a section-by-section analysis of several significant provisions of the proposed rule itself. The first exhibit is a report prepared by the expert safety consulting firm Exponent, Inc., that presents new test data confirming the safety of lithium ion battery-containing laptop computers when they are packaged for air transport. The second exhibit is a report – prepared by Campbell Aviation Consultants, LLC and TranSystems, Inc. (collectively “CAC/TranSystems”) using both publicly-available data ignored by PHMSA and actual cost data collected from real

companies – on the potentially ruinous economic impacts of the proposed rule and the errors in PHMSA’s cost-benefit analysis.

Finally, these comments and exhibits are supplemented by five attachments. These attachments include materials previously submitted to the National Transportation Safety Board (“NTSB”) and FAA, a list of PRBA’s members, a study on the impact of transportation delays, and congressional and DOT documents relating to PHMSA’s hazardous materials program.

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I. OVERVIEW OF PRBA'S CONCERNS AND RECOMMENDATIONS

1. PRBA's Interest in This Rulemaking

The organization now known as PRBA – The Rechargeable Battery Association was founded in 1991 to address the stewardship of used rechargeable batteries produced by the burgeoning consumer electronics industry. Over the years, PRBA's focus has expanded to include product stewardship issues and issues associated with the transportation of new and used products containing batteries. It also now addresses these issues in not only the context of their use in portable consumer electronics, but also in vehicles and industrial settings.

PRBA's members are listed in Attachment A. They include manufacturers of the vast majority of portable lithium ion cells and batteries produced in the world today, leading manufacturers of consumer, medical and defense products that incorporate those batteries, companies developing and manufacturing the batteries that will bring to market a new generation of hybrid and plug-in electric vehicles, and companies involved in research, development, distribution and sales of batteries and battery-containing products. PRBA's members range from some of the largest corporations in the world to manufacturers and distributors who are small businesses that Congress intended to protect under the Small Business Regulatory Enforcement Fairness Act. All of its members' activities and businesses would be dramatically affected by the changes presented in the proposed rule.

PRBA's perspective on these matters is also informed by its active role in the international transportation safety arena. PRBA has official observer status with the UN Subcommittee of Experts on the Transport of Dangerous Goods (the "UN Subcommittee of Experts"), advisor status with the ICAO Dangerous Goods Panel, and participates in meetings of the International Maritime Organization Dangerous Goods, Solid Cargoes, and Containers Sub-

Committee. It has presented numerous papers and recommendations to those groups, many of which have been accepted in their entirety. It was represented at the 2007 and 2009 ICAO meetings at which the divergences from the ICAO rules and UN Recommendations that are embodied in the current proposal were overwhelmingly rejected. While PRBA did not endorse every element included in the international rules adopted by ICAO, instead of those proposals, PRBA and its members have accommodated their activities to the international rules and believe they are fully adequate to assure safe transportation. Notably, however, PHMSA has never acted to incorporate those rules into U.S. law.

PRBA's attention to these safety issues has not been limited to attending and participating in meetings. PRBA has sponsored training programs in both the U.S. and China and several studies evaluating the performance of lithium ion batteries in aircraft fire situations. Two of these studies are referenced in the preamble to the proposed rule and thus already are in the record. A third, commissioned in direct response to the concerns underlying some of the most unnecessary and objectionable elements of the current proposed rule, is presented in Exhibit 1. That study, entitled "US FAA-Style Flammability Assessment of Lithium-Ion Batteries Packed With and Contained In Equipment (UN3481)," was performed by Exponent, Inc., the same firm upon whose work PHMSA and the FAA already were relying. It presents data from fire testing on notebook computers with and without batteries. The study established that the presence of the battery had no discernible effect on the overall heat release from a burning notebook during a time in which a pilot may make "appropriate decisions in the event of an emergency...to land the aircraft or take other emergency actions."

PRBA also has participated in prior PHMSA rulemakings and testified at the NTSB's July 12, 2006, hearing regarding the February 7, 2006, UPS aircraft fire in Philadelphia.

Attachment B includes a presentation made at that hearing by PRBA Board of Directors member Dr. Jason Howard, of Motorola, along with other materials previously submitted to the NTSB. Dr. Howard's presentation may be particularly helpful for PHMSA decision-makers who are not fully familiar with the lithium ion battery technology.

PRBA also has participated in activities that have led up to the proposal of this rule. We regrettably have concluded that some participants may have been overly aggressive, and intentionally or unintentionally may have lead the PHMSA staff to advance proposals that are neither supported by the facts nor reasonable. So the record is complete, we are compelled to explain the context and implications of those activities.

The Subcommittee of Railroads, Pipelines, and Hazardous Materials of the House Committee on Transportation and Infrastructure held a hearing on May 14, 2009, to receive testimony on reauthorization of the hazardous materials safety program operated by the Department of Transportation ("DOT"). At that hearing, Cynthia Douglass, then PHMSA's Acting Deputy Administrator, and Ted Willke, then Associate Administrator for PHMSA's Office of Hazardous Materials Transportation, were aggressively questioned by the Chairman of the House Transportation and Infrastructure Committee about the safety of transporting lithium metal and lithium ion batteries by air.¹

The following month, the Committee Chairman introduced the Surface Transportation Authorization Act of 2009. Among other things, that bill contained several provisions

¹ *Reauthorization of the Department of Transportation's Hazardous Materials Safety Program: Hearing Before the Subcomm. on Railroads, Pipelines, & Hazardous Materials of H. Comm. on Transportation & Infrastructure, 111th Cong. 6-30 (2009).*

addressing the transportation of lithium metal and lithium ion batteries. The comprehensive bill stalled, however.

On September 10, 2009, the House Transportation and Infrastructure Committee held a hearing to address the Chairman's concerns with PHMSA's oversight and management of hazardous materials safety in the United States. In this hearing, Calvin L. Scovell III, DOT Inspector General, testified regarding the findings of his organization's investigation into PHMSA's process for granting special permits and approvals for transporting hazardous materials, including lithium ion batteries. Inspector General Scovell was highly critical of PHMSA's performance.

Subsequently, the Chairman introduced H.R. 4016, a stand alone version of the battery and certain other provisions from the pending Surface Transportation Authorization Act of 2009. It included a provision that would have required DOT to initiate the current rulemaking, and sought to preordain the rulemaking's outcome. Congress continued to consider H.R. 4016 even after the draft of the current proposal had been prepared and was under review at the Office of Management and Budget ("OMB"). H.R. 4016 was reported out of the House Transportation and Infrastructure Committee in November 2009.

Tensions at the PHMSA staff were exacerbated by investigations by the House Transportation and Infrastructure Committee, at the purported behest of a whistleblower. Like the DOT Inspector General, the Committee asserted that some DOT staffers were "too 'cozy' with the industry."² Then, on the first day of fiscal year 2009, the leaders of PHMSA's Office of

² Press Release, House Transportation and Infrastructure Committee, *Chairman Oberstar and Subcommittee Chair Brown's Opening Statements from Today's Hearing on PHMSA's Performance*, (Sept. 9, 2009), at <http://transportation.house.gov/News/PRArticle.aspx?NewsID=994> (last visited Mar. 4, 2010).

Hazardous Materials Safety were suddenly transferred to other positions within DOT. This was widely viewed within the Agency as a purge. Documents related to these activities are appended as Attachment C.

PRBA has concluded that it was these activities, and perhaps others of which we are not currently aware, that led PHMSA to deny the repeated requests by PRBA and eleven other entities to extend the comment period on this proposed rule. In light of the magnitude of this proposal and its potential impact, those denials were fundamentally prejudicial to the regulated community.

As explained below and in Exhibit 2, if promulgated as proposed this rule would impose billions of dollars in new direct costs on American businesses and consumers, disrupt some of the most efficient product distribution systems in the world, and cost American jobs. PHMSA's own cost-benefit analysis reveals that the Agency itself did not fully understand the scope of those impacts. That massive failure aside, however, the Agency asked for comment on over a dozen specific questions *in addition to* asking for comment on the proposed regulations themselves.³ Especially in a context in which there is no imminent hazard, it was irresponsible and unlawful for PHMSA to allow only a sixty day comment period.

Even absent this history, PHMSA regulations and the Regulatory Flexibility Act, 5 U.S.C. § 601, *et seq.*, require that the final rule arising from this proceeding be accompanied by a comprehensive regulatory flexibility analysis that, among other things, identifies and responds to the significant public comments filed in response to this rule. *See* 49 C.F.R. § 106.30. The same

³ These comments address most, but not all, of the issues raised for comment by PHMSA. For example, we do not comment on the impact of the proposed rule on infrequent shippers or the environmental impacts of the rule. The limited time available for comment simply has not allowed us to do so.

obligation also arises under other well-established general principles of administrative law. *Allied Local and Reg'l Mfrs. Caucus v. EPA*, 215 F.3d 61, 80 (D.C. Cir. 2000) (“For an agency’s decision making to be rational, it must respond to significant points raised during the public comment period.” (citing *Home Box Office, Inc. v. FCC*, 567 F.2d 9, 35-36 (D.C. Cir. 1977))).

The background provided above also serves to underline the importance of PHMSA’s factual and substantive response to the comments it is now receiving from PRBA and many others, and the need for the record to demonstrate that the final rule does not reflect improper pressures, intimidation, or bias.

2. The Proposed Regulation of Lithium Ion Batteries Does Not Comply with PHMSA-Specific Statutory Authorities

PHMSA cites two statutes as providing it with legal authority to promulgate the proposed rule and amend the existing Hazardous Materials Regulations (“HMR”): 49 U.S.C. § 5103(b) and 49 U.S.C. § 44701.⁴ The former provision is part of the Hazardous Materials Transportation Act (“HMTA”), 49 U.S.C. § 5101 *et seq.*; the latter provision is in the Federal Aviation Act, 49 U.S.C. § 40101 *et seq.* The relevance of the latter is unclear⁵ but, in any event, there is another clearly-pertinent authority that PHMSA did not cite: 49 U.S.C. § 5120. It directs the Agency to promulgate regulations that, where practicable, are consistent with the standards and requirements related to transporting hazardous material that international authorities have adopted. *Id.*

⁴ See 75 Fed. Reg. 1302, 1313 (Jan. 11, 2010). The HMR are codified at Parts 171-180 of Title 49 of the Code of Federal Regulations.

⁵ As PHMSA notes in the proposed rule, 49 U.S.C. § 44701 authorizes the FAA Administrator to promote safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for practices, methods, and procedures the Administrator finds necessary for safety in air commerce and national security. Under 49 U.S.C. § 40113(b), the authority to regulate the transportation of hazardous materials by air, in carrying out Section 44701, is coterminous with the Secretary of Transportation’s authority under 49 U.S.C. § 5103.

As further explained below, the proposed regulation of lithium ion batteries complies with none of these authorities.

A. *The proposed regulation is invalid under the HMTA*

The HMTA was enacted in 1975 in an effort to develop a uniform, national regulatory scheme for the transportation of hazardous materials to replace the then-existing patchwork of state and federal laws and regulations.⁶ It was substantially amended in 1990⁷ and restructured in 1994.⁸ However, the purpose of the HMTA remains, as Congress phrased it in 1990, to “authorize the [DOT] with the regulatory and enforcement authority to protect the public against the risks of all forms of hazardous materials transportation, and *to preclude potential for varying as well as conflicting regulations* a multiplicity of State and local regulations.”⁹

The HMTA does not authorize regulation of all risk, only of “unreasonable” risk. Thus, 49 U.S.C. § 5103(a) grants the Secretary of Transportation authority to designate a material as a “hazardous material” subject to regulation only if he determines it “may pose an *unreasonable* risk to health and safety and property” when transported in commerce (emphasis added). This listing is expressly required to be undertaken by formal rulemaking under the Administrative Procedure Act. 49 U.S.C. § 5103(b)(2).

⁶ See Pub. L. No. 93-633, 88 Stat. 2156 (1975); see also *Massachusetts v. DOT*, 93 F.3d 890, 891 (D.C. Cir. 1996); *S. Pac. Transp. Co v. Pub. Serv. Comm’n of Nevada*, 909 F.2d 352, 353 (9th Cir. 1990); *Jersey Cent. Power & Light Co. v. Lacey*, 772 F.2d 1103, 1112 (3d Cir. 1985); *Nat’l Tank Truck Carriers, Inc. v. Burke*, 608 F.2d 819, 824 (1st Cir. 1979).

⁷ Hazardous Materials Transportation Uniform Safety Act of 1990 (“HMTUSA”), Pub. L. No. 101-615, 104 Stat. 3244 (1990).

⁸ Pub. L. No. 103-272, 108 Stat. 758 (1994); Hazardous Materials Transportation Authorization Act of 1994, Pub. L. No. 103-311, 108 Stat. 1763 (1994). The 1994 amendments reorganized the act, reauthorized funding for the HMTA, and required DOT to undertake certain additional safety initiatives. S. Rep. No. 103-217, at 3 (1993).

⁹ S. Rep. No. 101-449, at 2 (1990) (emphasis added); see also 49 U.S.C. § 5101.

PHMSA has never undertaken a rulemaking to determine whether lithium ion cells or batteries merit classification as hazardous material *Cf.* 49 C.F.R. § 173.140(b) (citing 49 C.F.R. § 171.8 (definition of hazardous substance)). Based on the testing data discussed in the preamble to the proposal and at page 18 of these comments, as supplemented by the new Exponent report (Exhibit 1) accompanying them, there is a substantial doubt that a finding of unreasonable risk in transportation as cargo could be sustained.¹⁰

However, one need not resolve this question to recognize the unreasonableness of the current proposal as it applies to lithium ion batteries and products powered by them.¹¹ A regulatory agency's determination of reasonableness requires analysis of material and product characteristics, the degree of risk they present when transported in the mode to be regulated, and the consequences in the event of an untoward event. This evaluation must be rigorous and documented on the record. Nothing in the record presented by PHMSA comes even close to meeting the applicable standards.

To the contrary, the deficiencies of the proposal's preamble and supporting regulatory analysis are legion. These are documented in detail in both these comments and the detailed analysis of PHMSA's cost-benefit analysis that is Exhibit 2. There is simply no basis on which the regulatory program PHMSA proposes for lithium ion cells and batteries and products powered by them could be justified on the current record and without a comprehensive analysis

¹⁰ *See* Administrative Procedure Act ("APA"), 5 U.S.C. § 500, *et seq.* The HMTA provides that the Federal courts of appeals have exclusive jurisdiction under the APA to affirm or set aside any part of a final DOT action. 49 U.S.C. § 5127(c). The courts have consistently analyzed challenges to hazardous materials transportation regulations under the arbitrary and capricious standard of the APA. *See, e.g., City of New York v. DOT*, 715 F.2d 732, 741 (2d Cir. 1983) (holding that regulations concerning hazardous materials transportation will be upheld "as long as they are rationally related to the policy--the development of acceptable levels of public safety for each mode of transportation--underlying HMTA and are promulgated in accordance with the Administrative Procedure Act"); *Kappelman v. Delta Air Lines, Inc.*, 539 F.2d 165, 172 n.22 (D.C. Cir. 1976).

¹¹ Nothing in these comments should be read as waiving PRBA's right to address these legal questions in the event judicial review is sought of the final rule promulgated in this proceeding.

of and response to the substantial criticisms PRBA and many others are providing to the Agency. *Cf.* 49 C.F.R. § 106.30 (“A final rule will also identify issues raised by commenters in response to the notice of proposed rulemaking and give the agency’s response.”).

B. *The proposed regulation does not comply with Congress’ guidelines for when domestic regulations may deviate from international standards and requirements*

In 1994, Congress amended the HMTA to require that PHMSA harmonize its hazardous materials transportation regulations with international standards. The amendment provided that, “to the extent practicable,” regulations prescribed under 49 U.S.C. § 5103(b) should be consistent with the standards and requirements related to transporting hazardous material that were adopted by international authorities. 49 U.S.C. § 5120(b).

Congress did not give PHMSA a free hand in determining what is “practicable.” Instead, Congress provided that federal regulations must be identical to the international standards and requirements unless the Agency found that the standards and requirements were “unnecessary or unsafe” or that more stringent domestic regulations were “necessary in the public interest.” *Id.* § 5120(c). The same policy is also embodied in the nation’s trade laws.¹²

Congress’ strong preference for regulatory harmony with international standards and requirements is evident in the legislative history of the 1994 amendments. For example, a 1990 report by the Senate Committee on Commerce, Science, and Transportation explains that, absent

¹² The Trade Agreements Act of 1979 provides that “[n]o Federal agency may engage in any standards-related activity that creates unnecessary obstacles to the foreign commerce of the United States, including, but not limited to, standards-related activities that violate . . . international standards . . . each Federal agency, in developing standards, shall take into consideration international standards and shall, if appropriate, base the standards on international standards.” 19 U.S.C. § 2532(2).

special safety concerns, the federal regulations governing hazardous materials transportation should be consistent with international standards and requirements:

Although the United States is actively involved in the deliberation and standards-setting activities of the United Nations and related organizations, nothing in HMTA addresses DOT's participation in such international forums nor its application of Federal regulations in relation to recommended international standards. The Committee recognizes the importance of these activities and thus is codifying them in the bill. Also, this subsection is in conformity with title 4 of the Trade Agreements Act of 1979 . . . under which Federal agencies are required to adopt regulations consistent with standards adopted by international bodies to the maximum extent consistent with safety.

S. Rep. No. 101-449, at 14 (1990).

PHMSA, too, has repeatedly endorsed the value of international consistency in regulation. Most recently, the Agency explained the benefits of international consistency in an advanced notice of proposed rulemaking for an international harmonization rule:

Harmonization of domestic and international standards becomes increasingly important as the volume of hazardous materials transported in international commerce grows and the cost of conducting international commerce increases. Harmonization facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements for transportation of hazardous materials to and from the United States. By facilitating compliance with international standards, harmonization also tends to enhance safety for international movements, but only if the international standards themselves provide an appropriate level of safety.

74 Fed. Reg. 53982, 53983 (Oct. 21, 2009). PHMSA's recognition of the importance of consistent international standards is underscored by the leadership positions that Agency

employees have held at the UN Subcommittee of Experts on the Transport of Dangerous Goods and other international hazmat bodies.

Neither in this proposal nor any other context has PHMSA addressed the issues specified by 49 C.F.R. § 5120(b), much less substantiated and made the findings it requires. To the contrary, this statute and the policies it embodies are barely even acknowledged in the proposal or its preamble. *See* 75 Fed. Reg. 1302, 1318 (Jan. 11, 2010). In light of the strong presumption favoring international consistency in hazardous materials transportation regulation, regulations such as those proposed here could only be justified in exceptional circumstances that are supported by a substantial record. Neither condition exists here. PHMSA has neither explained why the international standards governing the transportation of lithium ion cells and batteries are “unnecessary or unsafe,” nor why the proposed regulations are “necessary in the public interest.” Absent an explicit finding that it is not practicable for the U.S. to adopt the standards that have otherwise obtained international consensus, and a clear rationale explaining that finding on a supportive record, the proposal cannot lawfully be adopted.

3. The Inadequate Regulatory Analyses Prepared by PHMSA Also Render the Proposed Rule Unlawful

The Regulatory Flexibility Act (“RFA”), 5 U.S.C. § 601, *et seq.*, requires PHMSA to undertake an analysis to identify the most cost-efficient method of attaining the statutory objectives to which the Agency is responding, and requires it to review the proposed rule’s effect on small businesses. The RFA also requires PHMSA to publish a regulatory flexibility analysis unless the head of the Agency certifies that the proposed rule will not “have a significant economic impact on a substantial number of small entities.” *Id.* § 605(b).

In reviewing the final rule under the APA, courts consider the process and results of the regulatory flexibility analysis prepared by the action agency. *See, e.g., Allied Local*, 215 F.3d at 79 & n.19. An agency rule may be overturned because an analysis is so defective as to render the rule unreasonable. *Cement Kiln Recycling Coal. v. EPA*, 255 F.3d 855, 868 (D.C. Cir. 2001) (“Failure to comply with the RFA ‘may be, but does not have to be, grounds for overturning a rule.’” (quoting *Small Refiner Lead Phase-Down Task Force v. EPA*, 705 F.2d 506, 538 (D.C. Cir. 1983))).

The regulatory flexibility analysis prepared so far by PHMSA completely fails to meet these legal requirements. It is replete with erroneous calculations and incorrect assumptions. It not only is not supported by real-world experience but, in some instances, makes assumptions or adopts procedures that are inconsistent with those routinely followed by DOT. The analysis also does not take into account the enormous impact the proposed rule would have on international trade and the global logistics operations of the lithium ion battery, consumer electronics, retail, and medical industries.

Due to these and other errors in its analysis, the Agency understates the direct costs attributable to the proposed rule by over \$1 billion, overstates the rule’s benefits by \$200 million, and wholly ignores the loss of American jobs and higher costs to U.S. consumers that would be caused by the rule. More detail on the faults in PHMSA’s regulatory flexibility analysis is available in the CAC/TranSystems report, which is Exhibit 2.

But there would be many other economic impacts of this proposal, which the limited time allowed for public comment has not allowed us to comprehensively address. For example, domestic manufacturers will have to raise prices to cover the costs imposed by the proposed rule.

Inevitably, sales (and profits) will decrease. In addition, U.S. products will be costlier to foreign purchasers than products which are manufactured outside of the U.S. and shipped to market under the less burdensome (but equally safe) international standards. The end result is that exports will decline and American jobs will be lost. Given the fragile state of the national economy, PHMSA must evaluate how U.S. companies will be disadvantaged by the proposed rule before it finalizes this proposal.

PHMSA also has failed to comply with the Unfunded Mandates Reform Act (“UMRA”), 2 U.S.C. § 1501 *et seq.*, and Executive Order 12866. Among other things, the UMRA requires the preparation of a “regulatory impact statement” where an agency proposes a rule that may result in the expenditure by the private sector of \$141.3 million or more in any one year.

2 U.S.C. § 1532(a). (The \$141.3 million figure includes an adjustment for inflation of the \$100 million originally stated in the statute.) PHMSA did not prepare a regulatory impact statement for the proposal, but it should have, because the annual impact of the proposed rule on the private sector will be nearly eight times the \$141.3 million threshold. *See* Exhibit 2, Table 2-1.

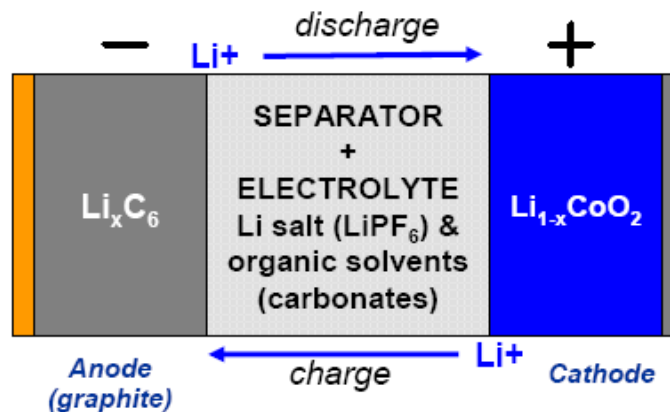
Similarly, but independently, Executive Order 12866 required PHMSA to submit impact statements with this proposed rule when it was sent to OMB in September 2009. Such analyses are required whenever a proposal may “[h]ave an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, [and] jobs” Exec. Order No. 12,866, 58 Fed. Reg. 51735, 51738 (Oct. 4, 1993). Information available in the docket indicates that PHMSA failed to comply with this requirement.

4. Lithium Ion Batteries and the Limited Fire Risk They Present

What a layman refers to as a battery may actually be a single cell or a combination of cells incorporated into a single package. When used in consumer products, these packages are typically referred to as “battery packs.” When used in vehicular and other applications, they often take the form of “modules” or “battery assemblies.”

The potential flammability of lithium ion cells and the components into which they are combined arises because lithium ion cells contain small quantities of a potentially flammable solvent as an electrolyte, not because they contain lithium metal. Thus, the flammability characteristics of lithium metal are irrelevant to the safe transportation of lithium ion cells and batteries and products into which they are assembled.

The chemistry of lithium ion batteries is explained more fully in Attachment B, Dr. Howard’s presentation to the NTSB. Below is a diagram of the process, taken from that presentation:¹³

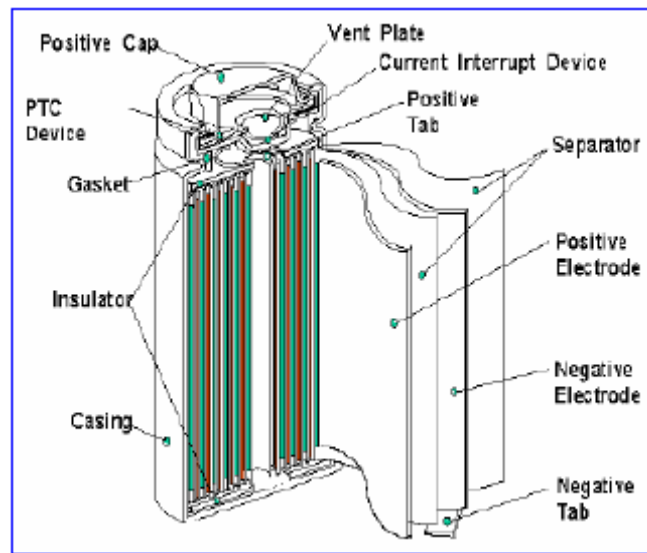


Lithium ion cells come in several shapes and sizes, but the basic design is quite similar.

Dr. Howard’s presentation contains more complete information, but the basic concept is that

¹³ The diagram depicts the most common lithium ion chemistry. Other chemistries may contain an active material in the anode and/or cathode that is different from the materials shown above.

tightly wound or stacked alternate layers of electrodes and separator materials are built up in a single container. Here is a diagram of a typical 18650 (18.5 mm wide by 65 mm length) lithium ion cell, the basic building block of consumer product battery packs, drawn from the Institute of Electrical and Electronics Engineers' ("IEEE") standard 1725:



The solvent that is contained in this and other lithium ion cells is not a free-flowing liquid, but is absorbed into the separator material. That is, these are “dry” batteries, not “wet” batteries (such as typical automotive starter batteries which contain free acid). Thus, neither lithium ion cells nor the batteries, battery packs, modules or battery assemblies into which they are combined present a risk of chemical exposure.

However, if the cells become overheated, the electrolytic material may vaporize. To prevent disassembly, each cell has a pressure relief valve. Under some rare circumstances, a small quantity of potentially flammable vapor can be emitted by a cell, and may ignite.

This risk is mitigated in several ways. Lithium ion cells and batteries for portable applications are built to rigorous international standards established by IEEE (e.g., IEEE 1625

and IEEE 1725) and the International Electrotechnical Commission (“IEC”) (e.g., IEC 61959, IEC 61960, and IEC 62133). They also must meet mandatory testing requirements in the UN Manual of Tests and Criteria, which are incorporated into both the ICAO Technical Instructions and DOT rules. Additional standards are being developed by IEEE and IEC for large format lithium ion cells and batteries designed for use in hybrid-electric and electric vehicles. Lithium ion cells also include a current interruption device to avoid overcharging that might result in the generation of heat. Battery packs, modules and battery assemblies contain additional protective devices to monitor and balance current flow, with the same goal.

If lithium ion cells, batteries, battery packs, modules, battery assemblies or products powered by them are packaged for shipping as cargo in compliance with existing PHMSA or international requirements, the chance of a short circuit that could initiate a fire is eliminated. PHMSA appears to recognize this; the only concern it has articulated with regard to the safety of these products when shipped as cargo is that their presence might exacerbate a fire that had been initiated by some other cause. *See* 75 Fed. Reg. 1302, 1307 (Jan. 11, 2010). Even this concern is unwarranted, however, as the history of air shipment of lithium ion cells, batteries, battery packs, modules, battery assemblies and products powered by them demonstrates.

Lithium ion cell technology was developed in 1991. In the last decade approximately 18 billion cells have been produced around the world.¹⁴ Most of these cells have been shipped by air at some time in their life cycle, often repeatedly – as cells being shipped to another location for assembly into battery packs or modules, and/or as batteries, battery packs, modules or battery

¹⁴ Christophe Pillot, *Present and Future Market Situation for Batteries*, Sept. 2009 (presentation at BATTERIES 2009) [hereinafter (“Pillot 2009”)]; Hideo Takeshita, *Worldwide Market Update on NiMH, Li Ion & Polymer Batteries for Portable & the Future Applications*, Mar. 16, 2009 (presentation at The 26th International Battery Seminar & Exhibit) [hereinafter (“Takeshita 2009”)].

assemblies for incorporation into consumer products, and/or as the components of hybrid-electric (or electric) vehicles or military, aerospace, and medical equipment. In 2008 alone, over 3 billion lithium ion cells were manufactured worldwide.¹⁵ In 2009, there were nearly 340 million notebooks, cellular phones, and digital still and video cameras packed with or containing lithium ion batteries that were shipped to the U.S.; and the vast majority of these were transported on passenger or cargo aircraft.¹⁶

Despite this volume of shipments, there has never been an aircraft accident attributed to carriage of lithium ion cells or batteries or products powered by them. None of the “incidents” that the FAA has attributed to batteries relate, in any way whatsoever, to properly packaged lithium ion cells or batteries; indeed, very few of these incidents relate in any way to lithium ion cells or batteries shipped as cargo.¹⁷ *See* Exhibit 2, §§ 4.1-4.3. Nor was the NTSB able to identify the cause of the UPS fire in Philadelphia in February 2006, to which PHMSA refers in the preamble of the current proposal, after extensive investigation.

Testing sponsored by FAA and industry have shown one reason for this exemplary record. As the preamble of the proposal notes, these tests show conclusively that the presence of lithium ion batteries in a cargo hold in which a fire breaks out (which, under existing regulations,

¹⁵ Pillot 2009; Takeshita 2009.

¹⁶ U.S. Census Bureau of the Census, Foreign Trade Division.

¹⁷ An additional handful of the battery “incidents” identified by FAA related to lithium ion-powered equipment carried onto aircraft by passengers or crew. The proposed rule does not address risks that might be attributable to such carriage, however, which in any event are no more substantial than those presented by cargo transportation.

could only be for some reason unrelated to the cells and batteries) will not make the fire uncontrollable.¹⁸

To further address the issues raised by the instant rulemaking, PRBA commissioned a third study by Exponent. It subjected laptops packaged for cargo transportation to the same tests employed in the prior FAA and Exponent studies, and is Exhibit 1. To the best of PRBA's knowledge, this is the only such safety test that has ever has been run, anywhere in the world. The Exponent report presents data from fire testing on notebook computers with and without batteries. That testing established that the temperature and heat flux values from the initial flaming period – the time in which a pilot makes appropriate decisions in the event of an emergency – were effectively identical. That is, the presence of the battery had no discernible effect on the overall heat release during that period of time.

As noted above and in Attachment D, even if the FAA list of battery “incidents” on which PHMSA has so heavily relied in developing the proposed rule correctly characterized the incidents it describes, it does not support PHMSA's conclusions. More fundamentally, however, the document is inherently suspect. It consists largely of compilations of hearsay reports that have not been subject to any rigorous evaluation or examination. In fact, FAA has rebuffed PRBA's efforts to bring a greater level of confidence to that effort. Attachment D; *see also* pp. 34-35, *infra*.

¹⁸ Harvey Webster, FAA Office of Aviation Research and Development, *Final Report: Flammability Assessment of Bulk-Packed, Rechargeable Lithium-Ion Cells in Transport Category Aircraft*, DOT/FAA/AR-06/38 (Sept. 2006), available at <http://www.fire.tc.faa.gov/pdf/06-38.pdf> (last visited Mar. 4, 2010); United Kingdom Civil Aviation Authority, *Dealing with In-Flight Lithium Battery Fires in Portable Electronic Devices*, CAA Paper (2003/4); Exponent, Inc., *US FAA Style Flammability Assessment of Lithium Ion Cells and Battery Packs in Aircraft Cargo Holds* (April 15, 2005).

5. Why the International Rules Make Sense

In October 2007 and October 2009, the ICAO Dangerous Goods Panel (“DGP”) rejected by an overwhelming majority proposals offered by the International Federation of Air Line Pilots’ Associations (“IFALPA”) to eliminate the exceptions in the ICAO Technical Instructions for small lithium ion and lithium metal cells and batteries. Those proposals were substantially identical to much of the current proposed rule. Every one of the rationales PHMSA has offered to justify promulgating U.S. lithium ion battery rules that are inconsistent with the international rules were considered and rejected by ICAO, twice.¹⁹

The ICAO DGP consists of 16 individuals nominated by ICAO member countries.²⁰ Each member of the DGP possesses technical and regulatory expertise on aviation safety and a broad range of issues associated with the transportation of dangerous goods such as explosives, radioactive materials, infectious substances, flammable liquids, corrosives, oxidizers, and flammable solids and gases. Developing regulations that will ensure the safe transport of these dangerous goods is the DGP members’ top priority. The DGP members had exhaustive discussions in 2007 and 2009 on issues about the transportation of lithium ion batteries. They held more than a dozen working group meetings during that period to evaluate existing regulations. As a result of those discussions, the DGP members agreed to significant new restrictions on the provisions in the ICAO Technical Instructions that govern both lithium ion

¹⁹ As explained above, PHMSA’s failure to adopt these ICAO provisions also is contrary to U.S. law and the Agency’s long-standing position that harmonizing with the international dangerous goods regulations promotes safety and facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements.

²⁰ In addition, both IFALPA and the International Air Transport Association are permitted to nominate individuals to the ICAO DGP.

and lithium metal batteries, but rejected the modifications of those instructions that are the core of PHMSA's current proposal.

PHMSA claims that its proposed rule will enhance safety by ensuring that all covered batteries are designed to withstand normal transportation conditions, packaged to reduce the possibility of damage that could lead to an incident, and accompanied by hazard communication information that ensures appropriate and careful handling by air carrier personnel and informs transport workers and emergency response personnel of actions to be taken in an emergency. In fact, the provisions adopted in 2007 by the ICAO DGP that went into effect on January 1, 2009, already address all these concerns. These new instructions require that:

1. Cells and batteries must be packed in inner packagings that completely enclose the cell or battery.
2. Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
3. Each package must be capable of withstanding a 1.2 meter drop test in any orientation without:
 - damage to cells or batteries contained therein;
 - shifting of the contents so as to allow battery to battery (or cell to cell) contact;
 - release of contents.
4. Each package must be labelled with the below lithium battery handling label:



ICAO Required Label

5. Each consignment must be accompanied with a document such as an air waybill with an indication that:
 - the package contains lithium ion or lithium metal cells or batteries as appropriate;
 - the package must be handled with care and that a flammability hazard exists if the package is damaged;
 - special procedures should be followed in the event the package is damaged, including inspection and repacking if necessary; and
 - a telephone number for additional information.
6. Any person preparing or offering cells or batteries for transport must receive adequate instruction on these requirements commensurate with their responsibilities.
7. Packages containing small, consumer-type lithium ion batteries may not exceed 10 kilograms (a significant reduction from the 30 kilograms authorized prior to 2009).
8. Packages containing small, consumer-type lithium metal batteries may not exceed 2.5 kilograms (a significant reduction from the 30 kilograms authorized prior to 2009).

In light of this international consensus and the legal authorities summarized above, unless it replaces the proposal with these provisions, PHMSA must explain on the record why these provisions are not sufficient to meet the concerns the agency has expressed and why the additional obligations it seeks to impose on the regulated community are necessary. It is not enough for PHMSA to baldly assert that its rules are “consistent” with the international rules. PHMSA must address all of the variances between its proposed rule and these international provisions, and justify the burdens those variances would create with factual evidence in the record.

6. PHMSA’s Cost-Benefit Analysis Grossly Underestimates the Massive Economic Impact of the Proposed Rule

As explained in Exhibit 2, the Agency has utterly failed to meet any reasonable test of benefit-cost justification for its proposed rule. PHMSA has underestimated the true economic costs of the proposed rule by over \$8 billion and overstated the rule’s benefits by \$200 million.

When the errors in PHMSA's analysis are corrected, the benefit-cost ratio shows less than one cent of benefits per dollar of cost. Exhibit 2, § 2.4.

Even assuming that PHMSA correctly identified all the relevant costs, which as explained below it did not, the Agency's estimate that the proposed rule would cost \$9.4 million annually to implement (\$70.5 million over ten years), is wrong. PHMSA's analysis is based on broad assumptions, most of which are not sourced or empirically derived, and erroneous calculations that greatly underestimate the proposed rule's costs. For example, based on unsupported assumptions about the size of lithium ion batteries and packaging, the Agency calculates that the proposed rule would produce a net *decrease* in outer packaging costs – even though the rule would impose more stringent packaging requirements.²¹ The Agency also misapplies its own formula for estimating the proposed rule's impact on hazmat training costs. Consequently, its calculation of the rule's impact on training costs is 400% lower than the value produced when the formula is correctly applied. If a few simple corrections are made, the ten-year costs under PHMSA's analytical framework nearly triple from \$70.6 million to \$191.8 million. Exhibit 2, § 3.1.5.

There are more glaring problem with PHMSA's cost estimates, however. The Agency failed to research or understand the broad upheaval in global supply chains and distribution methods that would be caused by the proposed rule. Companies that ship lithium ion cells and batteries, and the products into which they are incorporated, will be charged hazmat handling fees by airlines and other logistics service providers if the rule is implemented. And to the extent

²¹ In its analysis, PHMSA treats all lithium ion cells and batteries, and the products into which they are incorporated, as a single uniform product: the 18650 lithium ion cell. It further assumes that this uniform product will be shipped in a uniform size box in quantities of 200 to 250 once the rule is implemented. PHMSA provides no basis whatsoever for these assumptions, which fundamentally mistake lithium ion cells and batteries as commodities for which package capacity and size can be varied independently of the products in which they are contained.

these companies are able to shift to non-air modes of shipment, they will incur increased inventory costs due to transport delays.²² The end result will be higher costs and slower delivery of electronics products for U.S. consumers, and possibly the relocation of U.S. distribution centers to Mexico and/or Canada with a loss of jobs, payroll, and revenue. Exhibit 2, § 2.3.

PHMSA's analysis does not recognize any of these costs, but it could (and should) have. Had the Agency used publicly available trade data and conducted some research into the logistics operations of the regulated industries, as was done by CAC/TranSystems, its estimate of the annual costs attributable to the proposed rule would have been dramatically higher. The analysis performed by CAC/TranSystems indicates that the rule's true direct costs to industry will be over \$1 billion a year, not \$9.4 million as calculated by PHMSA. Exhibit 2, Table 2-1.²³

The Agency's estimate of the proposed rule's benefits suffers from similar flaws. PHMSA cites irrelevant "incidents" – not accidents – and erroneously applies data that bear no relation to the real-world to produce an inflated benefits estimate. For example, PHMSA inappropriately uses cost data from the catastrophic loss of the ValuJet DC-9-30 in 1996 to estimate the benefits of its proposal. But the ValuJet crash, which accounts for two-thirds of the total loss due to the "incidents" considered by PHMSA, was due to the improper handling of empty oxygen canisters and had nothing to do with lithium ion cells or batteries. It is completely irrelevant to this rulemaking.

²² In addition, if the distribution channel for a product combines air with another mode of shipment, the packaging would have to conform to the newly proposed requirements and would have to be shipped as Class 9 hazardous materials the entire route. Alternatively, the product could be repackaged before or after it is shipped by air. Either way, the company shipping the product is going to incur an extra cost that does not exist under the current regulatory scheme and which is not accounted for by PHMSA in its cost-benefit analysis.

²³ The costs calculated by CAC/TranSystems do not include the loss of lives that would result due to the unavailability of express air shipment for life saving medical devices powered by lithium ion cells or batteries.

PHMSA has provided no historical data on any aircraft accidents or damage, or any personal injuries or deaths, due to the transportation by air of lithium ion cells, batteries, or the products that contain them. Notwithstanding this lack of historical data, PHMSA incorporates 100% of the savings of a catastrophic aircraft loss during the next 10 years into its benefits estimate.

This approach is wrong for two reasons. First, it is in direct contradiction of standard FAA methods for estimating aviation safety benefits. Historically, the FAA has used *accident* data and Monte Carlo simulation models to estimate the benefits of a newly proposed regulation. *See* Exhibit 2, § 4.0. PHMSA, however, assumes the proposed rule will be 100% effective in preventing loss. Second, even if it the proposed rule were 100% effective, PHMSA used the wrong aircraft replacement values in its benefits estimate. It used the current list prices posted by Boeing when it should have used the market-based replacement costs developed by FAA. *See id.*

If all the errors in PHMSA's benefits estimate are corrected, the net present value of the proposed rule's benefits is at most \$1.4 million. Exhibit 2, § 4.5. This is several orders of magnitude lower than the benefits estimate produced by PHMSA.

7. PHMSA Has Wholly and Unlawfully Failed to Consider the International Trade Implications of Its Proposal

Nowhere in the preamble to the proposal or documents supporting it is there an indication that PHMSA gave any substantive consideration whatsoever to its proposal's noncompliance with the WTO Agreement on Technical Barriers to Trade ("TBT Agreement"). It would be a fundamental error, however, for PHMSA to fail to consider these implications in its decision making.

The TBT Agreement addresses the imposition of technical regulations and standards by the United States and other WTO members. While it recognizes that countries may impose technical regulations and standards to protect human health and safety, it also commits the U.S. to not doing so in ways that create unnecessary barriers to trade.²⁴ The Agreement also provides that, as a general matter, “technical regulations shall not be more trade-restrictive than necessary to fulfill a legitimate objective.”²⁵

The TBT Agreement also addresses the issue of international standards. It provides that, where relevant international standards exist, a country adopting a technical regulation or standard should use the international standard as the basis for the technical regulation. A country can diverge from the international standard only if the international standard would be “ineffective or inappropriate.”²⁶

Two decisions interpreting these requirements by the WTO Appellate Body explain what these terms mean. The first involved a challenge by Canada to a French regulation prohibiting the import or sale of products containing asbestos or asbestos fibers.²⁷ The WTO Appellate Body explained that technical registrations regulating the characteristics of a product fall under the TBT Agreement. The Body further explained that prescriptions regarding packaging are considered characteristics. Under these principles, the proposed regulation regarding lithium ion batteries would be considered a “technical regulation” for purposes of the TBT Agreement

²⁴ WTO TBT Agreement, Art. 2.2.

²⁵ *Id.*

²⁶ *Id.*, Art. 2.4.

²⁷ European Communities – Measures Affecting Asbestos and Asbestos Containing Products, WT/DS135/AB/R.

because it regulates the characteristics of lithium ion cells, batteries, battery packs, and modules, including both specifications for those products and the manner in which they must be packaged.

Second, in a challenge by Peru to the European Union's regulations regarding sardines, the WTO clarified what variances from international requirements are acceptable.²⁸ In the regulation in question, the European Union ("EU") had specified that only fish belonging to a single species, *Sardina pilchardus*, could be labeled and sold as "sardines." The EU's regulation was at odds with a regulation adopted by the U.N. Food and Agricultural Organization, which allowed the labeling of other species as "sardines." The WTO Appellate Body held that the EU had not complied with Article 2.4 of the TBT, because it had not used the international standard as a basis for its own regulation.

The Body found that the international standard was both an effective and appropriate means of achieving the objectives of the EU regulation, which included market transparency, consumer protection, and fair competition. It also held that individual nations' regulations can diverge from a relevant international standard only if the international standard would be an "ineffective or inappropriate means" for achieving a legitimate objective.

In light of the widespread international adoption of and compliance with the ICAO regulations, this decision is directly relevant to this rulemaking. PHMSA simply cannot both diverge from the ICAO regulations, and keep the U.S. in compliance with its WTO commitments, without a far stronger basis than it has provided to date for doing so. Moreover, as shown in these comments and the many other comments being filed by battery manufacturers,

²⁸ European Communities – Trade Description of Sardines, WT/DS231/AB/R.

users, retailers, and others in this proceeding, there is no factual or rational basis for PHMSA to make such a finding.

8. Unless PHMSA Conforms Federal Regulations to the International Regime, the Final Rule Cannot Be Put into Effect Before 2011

PHMSA's proposal to make its new rule effective 75 days after promulgation is unreasonable and unjustifiable, unless the final rule contains no provisions different from those adopted by the ICAO DGP and most other nations in 2009.

This is because of the enormous disruption of inventory, production, and product supply chains that would result from this proposed rule. Contrary to PHMSA's analyses and, apparently, the Agency's representations to the OMB, the costs of the changes it proposes would exceed, by far, the \$141.3 million threshold of the Unfunded Mandates Reform Act, 2 U.S.C. § 1501, *et seq.* See p. 13, *supra*; Exhibit 2, Table 2-1. They also would have dramatic impacts on many small businesses in the U.S. These impacts are not adequately addressed in the Agency's Regulatory Flexibility Analysis.

But it is not these costs alone that would preclude the expedited effective date PHMSA has proposed. There is a much more serious problem. As explained more fully in Exhibit 2 and in the many comments on this proposal being filed by other trade associations and individual companies, implementation of the requirements of this proposed rule would compel the restructuring of existing distribution practices in the consumer products industry and currently-anticipated methods for handling power modules for electric and hybrid vehicles; would preclude current "just-in-time" inventory supply management; would create requirements for more warehousing space and the investment to carry the inventory in it; and would frustrate and likely require the dismantling of the highly successful, industry supported, national rechargeable

battery recycling program. Elimination of these systems would profoundly disadvantage U.S. manufacturers, who could not count on timely receipt of components, and would likely drive U.S. jobs offshore. Moreover, even if justifiable – which they are not – these changes simply could not be put in place in less than 18 months' time.

For the following reasons, the disruptions would be especially significant for the 2010 Christmas season:

- Approximately 25% of consumer electronics sales occur in the last sixty days of the year – the Christmas season. It currently is planned that those products will be manufactured through the summer and fall, and shipped by air to the U.S. – from Asia and Europe – beginning in late September. That means hundreds of millions of dollars of products containing lithium ion batteries and replacement batteries will be shipped by air in October, November, and December alone.
- In the absence of currently-expected air transport capacity – which clearly would be the case – production decisions, inventory accumulation, and production itself would have to occur far earlier than is planned. For example, it can take up to 21 days for ocean freight from China to reach the U.S. To accommodate this, manufacturers would have to move production from September and October to July and August. But schedules cannot be changed instantly, and these scheduling changes would be felt all the way back up the component production chain. One need not be an industrial operations expert to see how a change in these rules anytime this year would be enormously disruptive to the upcoming Christmas season.

- In light of the deficiencies in PHMSA’s proposal and supporting documents, and the volume of comments, it is inconceivable that the Agency could fulfill its legal obligation to consider and respond to all comments by mid-Summer, much less mid-Spring. That being the case, any regulations that are different from international rules could not rationally and reasonably be put in place until after the 2010 Christmas season.

Under these circumstances, the Agency should allow at least 18 months for companies to achieve compliance. This amount of time is necessary to avoid undue harm to the economy and is well within the 24 months that PHMSA typically provides for less complex hazardous materials regulation revisions. *See* p. 33 & n. 33, *infra*. Given the Agency’s historical practice, and in light of the extraordinarily broad input of this rulemaking, allowing anything less than 18 months for compliance would be arbitrary and capricious.

II. PRBA’S RESPONSES TO THE ISSUES RAISED FOR COMMENT BY PHMSA

1. Mandatory Compliance Date of 75 days and Practical Difficulties Associated with Quickly Coming into Compliance with Final Rule (pp. 1302 & 1313 of proposal).

PRBA strongly opposes a mandatory compliance date of 75 days after the date of publication of the final rule. PHMSA’s lofty goal to “expedite compliance”²⁹ with these amendments will not be achieved if the Agency provides companies with such a short transition period. To the contrary, if the Agency adopts a 75-day compliance date it will “expedite non-compliance” with the U.S. hazardous materials regulations, because companies will not have enough time make the necessary changes to their logistics operations. Companies will need at least 18 months to come into compliance with the new regulations. Anything less would cause a

²⁹ 75 Fed. Reg. 1302, 1308 (Jan. 11, 2010).

massive disruption to companies' supply chains and a loss of U.S. jobs, and would be arbitrary and capricious under the APA.

By proposing a compliance period of only 75 days, PHMSA has demonstrated that it lacks even a basic understanding of the complex, world-wide logistics operations of the lithium ion battery, consumer electronic, retail, and medical industries. The companies in these industries have spent many years optimizing their logistics operations so that they can rapidly fulfill orders for lithium ion batteries and battery-powered products, such as life-saving medical devices, while simultaneously keeping their domestic inventory levels low. The resulting supply chains depend on ready availability of air transportation, which this proposal seriously threatens.³⁰ They also are global in nature and simply cannot be brought into compliance within 75 days after publication of the final rule.

For example, it is typical for manufacturers of portable electronic equipment such as notebooks, cellular phones, and power tools to have multiple manufacturing locations in Asia. A typical logistics scheme for lithium ion cells, batteries, and portable electronic equipment would be as follows:

1. A lithium ion cell is manufactured in one country (Japan) and shipped to a second country (Taiwan) where the battery pack is assembled.
2. The battery pack is then shipped to a third country (China) where it is “married up” with the portable electronic equipment.
3. The portable electronic equipment is then shipped to the U.S. to a distribution center; retail store; or directly to end user (consumer).

³⁰ See Express Association of America, *Comments on Notice of Proposed Rulemaking of the Hazardous Materials Regulations on Lithium Batteries*, at 3, 5 (Mar. 12, 2010) (noting that the proposed stowage limitations would cost as much as \$775 million alone for Asia-origin flights).

4. If shipped to a distributor or retailer's distribution center, the equipment could be shipped one to three times more before it reaches the consumer. In addition, it is a common practice for products at U.S. distribution centers to be exported to Canada, Mexico, or Latin America.

If implemented, the proposed rule would result in substantial disruptions of millions of kilograms of airfreight each year. Based on data published by the U.S. Bureau of the Census, Foreign Trade Statistics, the value of products potentially impacted by the rule may be as high as \$100 billion annually. Exhibit 2, Table 3-1. The disruption of these complex supply chains would ultimately impact the final consumer by delaying product availability and increasing prices.

To avoid shipping products by air into the U.S., product and battery manufacturers would be left with two options: shipping by cargo vessel or moving distribution centers out of the U.S. to Canada or Mexico, shipping product to them only by non-U.S. carriers (thus costing those companies sales and their employees' jobs), and shipping by ground into the U.S. Both of these options also come with substantial other costs. First, they will significantly increase inventory carrying costs of parts as longer lead-times will result. Exhibit 2, § 3.3.3. Second, most companies would be required to comply with new packaging, marking, labeling, and training requirements. Training, in particular, would be required of far more employees than PHMSA has recognized, and at far greater cost. Exhibit 2, § 3.1.3. More detailed information and data on the foregoing logistics model and other industries' logistics operations are contained in the attached analysis of the rule's economic impact.

In light of the impacts described above, PHMSA should allow industry at least 18 months to come into compliance with the new requirements and proposed changes to the HMR. This amount of time is necessary for companies to deplete their current stock of packaging materials,

develop and implement “specification” packaging, train employees,³¹ review and possibly renegotiate contracts with suppliers and warehouses,³² and implement changes to their world-wide logistics operations.

DOT typically provides for a 12-month or longer transition period for rules that harmonize U.S. regulations with international changes. But this rule would go far beyond harmonization – to the contrary, it is very complex, with far-reaching impacts that affects hundreds of industries in the U.S. and internationally. Moreover, PHMSA historically has provided the longer periods – as much as 24-months – for regulatory changes which significantly affect testing, certification, packaging, labeling, and marking.³³ This obviously is such a case. At least 18 months must be allowed to change the world-wide complex logistics operations to adapt to this rule.

Furthermore, the Agency should provide an exemption (*i.e.*, a grandfather clause) for batteries and products that are already in the logistics pipeline or on the market prior to the

³¹ For example, one PRBA member has informed us that it would have to train thousands of employees in its sales, logistics, legal, compliance, marketing, engineering, and service departments, because these employees regularly ship lithium metal and lithium ion cells and batteries for one or more of the following reasons: use by retailers and distributors for training, evaluation and sampling purposes; certification by independent testing companies; evaluation by government agencies; display at trade shows; evaluation by trade and general publications; and evaluation and testing by OEM customers.

³² Many companies will need to renegotiate their contracts with warehouses, because the current contracts do not include storage and handling of dangerous goods.

³³ *See, e.g.*, 74 Fed. Reg. 2199 (Jan. 14, 2009) (allowing 24 months for companies to achieve compliance with new stacking marking requirements for batteries and battery powered devices); 73 Fed. Reg. 4699 (Jan. 28, 2008) (allowing 24 months for companies to achieve compliance with new requirements that enhanced the effectiveness of hazard communication relative to ethanol/gasoline blends); 72 Fed. Reg. 4442 (Jan. 31, 2007) (“[Requiring] compliance . . . [within] one year . . . may result in insufficient time or undue hardship on the affected parties to come into compliance with the new [overpack] requirements [for transportation of oxygen cylinders aboard aircraft]. A compliance date that allows flexibility . . . and sufficient time for various manufacturers to develop and market the necessary equipment would better serve the overall objectives of this rulemaking. Therefore, we are amending the HMR to establish a mandatory compliance date of two years . . .”).

compliance date. Otherwise, companies will be required to delay shipment of or possibly recall items currently in commerce in order to repackage them. Not only would this be extremely disruptive to the companies and their customers who are expecting shipment, but it would also have a significant impact on the national economy as a whole.

PRBA does not support a phased-in compliance date for any of the proposed changes as a result of the concerns noted above. History has shown that phased compliance schedules do not work. PHMSA provided phased-in compliance dates in the HM-224C and HM 244E lithium battery rule published on August 7, 2007. This caused a substantial amount of confusion for shippers, airline industry and PHMSA enforcement personnel. We believe it is only practical for the agency to provide for at least an 18 month compliance period in order to provide the business and industry sufficient time to address the changes to the regulations.

The only way a shorter implementation period would be reasonable is if PHMSA adopted the ICAO Technical Instructions and IMDG Code provisions applicable to lithium ion and lithium metal batteries in place of the proposed rule. These regulations have been in effect since January 1, 2009, and are far more restrictive in many respects than the existing HMR. PRBA strongly encourages PHMSA and FAA to issue a final (or interim final) rule that harmonizes the U.S. HMR with the ICAO Technical Instructions and IMDG Code with a 90-day compliance date, while it gives further consideration to other changes it has to inadequately be considered to date. Most shippers of lithium ion and lithium metal batteries for domestic transportation already are compliant with the ICAO Technical Instructions or IMDG Code and therefore can meet the 90-day compliance deadline. Harmonizing with the international dangerous goods regulations also promotes safety and facilitates international trade by minimizing the costs and other burdens of complying with multiple or inconsistent safety requirements.

2. Improving Data Collection on Battery Incidents, Methods Available to Quantify Lithium Battery Risks, and Potential Risk Mitigation Techniques and Alternatives (pp. 1306-07)

PRBA and its members are, and always have been, prepared to work cooperatively with PHMSA and FAA to collect data related to battery incidents, to quantify lithium ion battery risks, and to explore potential risk mitigation techniques and alternatives to the unreasonable provisions in the proposed rule. The Agencies, however, have repeatedly chosen not to seek our help, and generally have a poor record of cooperation with the battery and electronics industries.

For example, PRBA did not learn of FAA's findings on the battery incidents that occurred in 2009 and the flammability testing FAA recently conducted regarding lithium ion cells designed for use in aircraft until after the information was posted to the Agency's website. Had the Agency alerted PRBA of its inquiries into the battery incidents, we could have shared the analysis one of our members conducted on an E-Bike battery that was involved in one of them (an incident in June, 2009).³⁴ Industry wants to be more involved in investigating incidents so it can help identify the incidents' root causes. The Agency's failure to conduct such root cause analyses frustrates industry's ability to prevent the same incidents from happening again, either through design and process changes or regulation.

³⁴ Inadequate cooperation was also demonstrated in 2004 when FAA conducted a flammability test on lithium metal batteries without industry input. Because it had not allowed adequate input, the Agency tested only one of the four major lithium metal battery chemistries, and reached erroneous conclusions. This result would not have occurred if FAA had asked industry in advance to help identify the types of lithium metal battery chemistries it should test for flammability.

The lack of openness with regard to FAA's ongoing lithium ion battery research – funded by U.S. taxpayer dollars – is discouraging. FAA should regularly update the industry with regard to its ongoing research in order to foster a better working relationship with industry.³⁵

3. Development of an Internal Short Circuit Test for Lithium Ion Cells (pp. 1307 & 1309)

PRBA agrees with PHMSA that it would be inappropriate for the Agency to adopt an internal short circuit test for lithium ion cells in the absence of a reliable test method specification in the UN Manual of Tests and Criteria. PHMSA does not have the resources, technical expertise, or real-world experience required to develop a cost-effective internal short circuit test for lithium ion cells.

Furthermore, as PHMSA noted in the proposal, the development of an internal short circuit test currently is under consideration by the international battery experts and regulators participating in the UN ad hoc lithium battery working group. The next meeting of that group, which includes staff from PHMSA, is scheduled to occur in May 2010. The issue of such a test will be discussed at that meeting. The working group's members possess the skills and experience to develop a test and the experience to understand the implications or costs associated with conducting internal short circuit tests. Conducting an internal short circuit test, particularly like the one being considered by the IEC, can be technically complex. Many testing labs that conduct tests required by the UN Manual of Tests and Criteria are not equipped to conduct such a test. In fact, no testing lab in the U.S. is currently performing one of the tests under

³⁵ In contrast to their rulemaking and testing activities, the PHMSA and FAA enforcement divisions have worked cooperatively with PRBA. For example, FAA approached PRBA in July of 2009 for help in developing over 100 PowerPoint slides for training their enforcement agents on the lithium battery regulations and technologies. In addition, PRBA met with approximately 60 PHMSA enforcement agents in 2007 to explain how the lithium battery regulations are being applied in the field. PRBA also provided a list of detailed questions for enforcement agents to use when conducting audits at companies that ship lithium batteries.

consideration by IEC, Japan's "Forced Internal Short Test." PHMSA should defer to the working group on this issue and await the group's determination as to whether an internal short circuit test is appropriate for the UN Manual of Tests and Criteria.

4. Changes to Tests in the UN Manual of Tests and Criteria to Accommodate Large Format Lithium Ion Batteries and Battery Assemblies (pp. 1309-10)

PRBA appreciates PHMSA's support for the changes to the UN Manual of Tests and Criteria for large format lithium ion batteries and battery assemblies that were initially proposed by PRBA in July 2008 and adopted in December 2008 by the UN Subcommittee of Experts on the Transport of Dangerous Goods. These large format batteries are being designed for use in hybrid-electric vehicles, electric vehicles, and stationary, military and aerospace applications, and many of our members manufacture them. It is important for PHMSA to continue working cooperatively with PRBA, members of the UN Subcommittee of Experts, and the UN ad hoc lithium battery working group in order to ensure the tests in the UN Manual of Tests and Criteria accommodate large format lithium ion batteries and battery assemblies and do not impede the substantial progress that has been made on this issue over the past three years. We also appreciate the fact that PHMSA is proposing to incorporate into the HMR the Fifth Revised Edition of the UN Manual of Tests and Criteria, which includes the changes that were adopted at the December 2008 UN Subcommittee meeting.

Nevertheless, we have a concern arising from the January 1, 2011, effective date of the Fifth Revised Edition of the UN Manual of Tests and Criteria. Should promulgation of the final rule in this proceeding not occur before January 1, 2011, PHMSA should be sure to incorporate the Fifth Revised Edition of the UN Manual of Tests and Criteria into the HMR through a separate rulemaking before the end of this year. This would enable PRBA members to test their

cells and batteries to the new UN lithium battery testing requirements when they become effective internationally on January 1, 2011.

We also appreciate and support PHMSA's proposal to incorporate into the HMR the UN Manual of Tests and Criteria for large format lithium ion batteries. Doing so is very important to our members who manufacture these large format batteries for hybrid-electric and electric vehicles, military and aerospace applications, many of whom are receiving support from the U.S. government for their efforts.

5. Cell and Battery Marking and Documentation to Confirm Compliance with UN Lithium Battery Tests (p. 1310)

PHMSA should not require use of the UN symbol as a "visible quality mark" on cells and batteries to indicate compliance with the design type tests outlined in the UN Manual of Tests and Criteria. PRBA's members for many years have tested their cells and batteries in full compliance with the UN Manual of Tests and Criteria. We and our members share PHMSA's concerns regarding non-compliant battery manufacturers. However, mandating the use of the UN symbol on all cells and batteries will not overcome this noncompliance. Nor would the purported "promote[ion of] knowledge of the UN Tests throughout the world and enhance[ment of] compliance with [the UN] safety standards"³⁶ outweigh the cost and confusion arising from mandating another mark. There certainly is nothing in the record that supports the assertion that usage of a UN symbol marking, which can easily be counterfeited, will address the real concern: ensuring compliance with the UN testing requirements.

³⁶ 75 Fed. Reg. 1302, 1310 (Jan. 11, 2010).

The marking requirement has other flaws as well. The proposed rule fails to accommodate the fact that the marking could not be used on prototype batteries or on cells and batteries which are too small to accommodate a marking. Even if a mark were generally required, both of these situations should be exempted.

In addition, this marking on batteries will never be seen by hazmat enforcement agents from FAA and PHMSA when they are inspecting packages at airport or cargo vessel terminals. We believe diligent enforcement of the proposed recordkeeping requirements in this rule would be the most practical and effective method for ensuring batteries have been tested in compliance with the UN Manual of Tests and Criteria. PRBA would support PHMSA should it propose such a recordkeeping requirement at the UN and ICAO meetings.

Furthermore, PHMSA should not unilaterally require a UN symbol marking on batteries and cells without first consulting with the UN Subcommittee of Experts on the Transport of Dangerous Goods. The UN symbol has long been associated with UN specification packaging, and applying it to lithium ion (or lithium metal) cells and batteries is likely to cause widespread confusion about the marking's meaning.

Finally, even if the UN Subcommittee of Experts were to agree with the proposed marking requirement, it would be critical to include an exemption (*i.e.*, a grandfather clause) in the final rule for cells and batteries manufactured prior to the effective date of the requirement. Absent such an exemption, manufacturers would be required to recall the cells and batteries already in the marketplace or face a potential enforcement action for noncompliance with the marking requirement.

PRBA does not object to the Agency's proposal to require companies that manufacture lithium ion cells or batteries to maintain a record of satisfactory completion of the UN tests prior to offering the cells or batteries for transport, because this will help in even-handed enforcement. However, the proposal is not clear as to how this record retention requirement would apply. The Agency should clarify in the final rule exactly what entities are subject to this requirement, including whether it applies extraterritorially to foreign lithium ion cell and battery manufacturers.

6. Elimination of Exceptions for Air Shipments of Small Lithium Ion and Lithium Metal Cells and Batteries and Equipment Containing Them – Proposed 49 C.F.R. 173.185(d) (pp. 1310-11)

PRBA opposes the Agency's proposal to eliminate the exceptions for small lithium ion and lithium metal cells and batteries and equipment packed with or containing them when shipped by air, for several reasons. It is not necessary for safety. Furthermore, PHMSA has grossly underestimated the economic impact that the elimination of this exception will have on manufacturers and distributors of portable electronic equipment and lithium ion cells and batteries,³⁷ and the proposed "exceptions for surface transport" at proposed Section 173.185(d) are convoluted and confusing and include many requirements with which compliance will be impossible. These and the many other errors in PHMSA's rationale for eliminating the exceptions for air shipments are set forth in more detail immediately below.

³⁷ For example, PHMSA claims that eliminating the exception will have the net effect of moving "a *discrete number* of shipments of lithium cells and batteries that are currently handled as general cargo into the hazardous material transport system." 75 Fed. Reg. 1302, 1310 (Jan. 11, 2010). The dictionary defines "discrete" as "containing a separate thing" (Webster's New College Dictionary, at 325 (1995)), but we suspect PHMSA meant to imply "a small number." If so, PHMSA was wrong. In 2009, 210 million cellular phones, 47 million notebooks, 47 million digital still cameras, and 24 million video cameras – all packed with or containing lithium ion batteries – were imported into the U.S. Most of these products were imported by air, and often they were shipped by air an additional two or three times before reaching the end user.

A *PHMSA has grossly underestimated the economic impacts of eliminating the exceptions for air shipments*

As explained above in Section II.6, the Agency's cost-benefit analysis of the proposed rule is woefully inadequate and fails to provide any justification for eliminating the current exceptions for air shipments of lithium ion cells and batteries. In its analysis, PHMSA underestimates the true economic costs of the proposed rule by over \$8 billion and overstates the rule's benefits by \$200 million. When the errors in the analysis are corrected, the benefit-cost ratio of the proposed rule is less than 0.001. Exhibit 2, § 2.4. In other words, the proposed rule produces less than one cent of benefits for each dollar of cost it imposes on industry.

In general, PHMSA's cost estimates are based on a highly simplified representation of the complex trade and transportation markets for products that use lithium ion cells and batteries. The costs that PHMSA does estimate completely ignore the substantial disruptions that the proposed rule will cause to the supply chains of those products. The fact of the matter is that the proposed rule will increase costs for packaging, transportation, and other logistics services. Exhibit 2, §§ 3.0-3.4.2. The restrictions on shipping via air will also force many companies to carry more inventory as insurance against a delay in shipments by other modes. The end result will be higher product costs, lost sales and, potentially, fewer American jobs as companies relocate their distribution centers to Mexico and/or Canada to avoid excessive regulation of their lithium ion-powered products. *See* Exhibit 2, §§ 3.0-3.4.2, 4.6.

Similarly, the Agency's benefit calculations are not based on a detailed analysis of actual losses incurred under the current rule. Rather, PHMSA estimates future losses based on past "incidents" that did not involve lithium ion cells and batteries and which are totally unrelated to the proposed rule. PHMSA also speculates on what the benefits might be if a catastrophic loss of

a passenger aircraft and human lives were avoided. In both instances, PHMSA fails to demonstrate that the proposed rule will actually produce any of the purported benefits; the Agency simply assumes that the proposed rule will be 100% effective at preventing these speculative losses. Exhibit 2, §§ 4.0-4.5.

If the errors in PHMSA's inputs and methodology are corrected, the benefit-cost ratio of the proposed rule changes dramatically. The estimated direct costs of implementing the proposed rule rise from \$70.6 million, as calculated by PHMSA, to \$8.5 billion over ten years. Conversely, the estimated benefits decrease to a maximum of \$1.4 million over the same period. The result is a benefit-cost ratio of less than 0.001. In light of the proposal's disproportionately low benefits, it would be arbitrary and capricious and an abuse of discretion if the Agency promulgated a rule that eliminates the exception for air shipments.

It also should be emphasized that the foregoing analysis ignores both the additional injury that will be sustained by U.S. carriers operating overseas and the significant impact of lost sales of batteries and electronic products in the U.S. Calculation of the figure requires an evaluation of the price elasticity of various products, but the limited comment period allowed on this proposal has not allowed time to do a comprehensive study. *See* Exhibit 2, § 1.0. It also must be noted that even CAC/Transfer's direct cost estimates are probably an understatement, since they assume no growth in electronic production shipments.

A detailed critique of the Agency's flawed cost-benefit analysis is attached as Exhibit 2.

B. *Elimination of the exceptions for air shipments would make U.S. law inconsistent with the international dangerous good regulations*

Elimination of the exceptions for small lithium ion cells and batteries shipped by air would create a complex and confusing regulatory scheme for shippers and make U.S. regulations inconsistent with international dangerous goods regulations. In practice, if adopted, the proposal would result in at least four different sets of regulatory requirements, depending on the mode of transport used:

- Scheme 1: A package containing a laptop packed with a small lithium ion battery shipped domestically by motor vehicle or rail car would require only a marking on the outer package that states “LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT” and specified special procedures that should be followed if the package is damaged.
- Scheme 2: The same package containing a laptop packed with a small lithium ion battery shipped internationally by vessel would require the marking that states “LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT” and specified special procedures that should be followed if the package is damaged, plus the IMDG Code requires a marking with an indication that the package contains “lithium metal” or “lithium ion” batteries, an indication that the package shall be handled with care and that a flammability hazard exists, and a telephone number for additional information.
- Scheme 3: The same package containing a laptop packed with a small lithium ion battery shipped domestically by air would require a Class 9 label, a UN number and proper shipping name (and in some cases a cargo aircraft only label) and an accompanying hazardous materials shipping paper.
- Scheme 4: The same package containing a laptop packed with a small lithium ion battery shipped internationally by air would require all the markings and labels noted in Scheme 3 above plus UN specification packaging (as required by ICAO Technical Instructions) for the lithium ion battery. (PHMSA inexplicably eliminated the requirement for UN specification packaging for Class 9 shipments of lithium ion and lithium metal batteries packed with equipment in the proposed rule, which results in the HMR being less stringent than the ICAO Technical Instructions.)

In short, PHMSA is incorrect in asserting that the rule is “largely consistent with changes made to the United Nations Recommendations and ICAO Technical Instructions”³⁸ and will “simplify current and revised lithium battery requirements.”³⁹ In fact, the opposite is true. The proposed rule creates a more complicated and disharmonized regulatory scheme.

Moreover, the new language proposed for Section 173.185(d) appears to authorize shippers of equipment with installed small lithium ion batteries to simply place equipment in zip-lock plastic bags and ship them, with no further packaging requirements. Proposed section 173.185(d) provides an exception from specification packaging requirements, proposed Section 173.185(d)(2) authorizes equipment containing lithium ion batteries without strong outer packaging, and proposed Section 173.185(d)(3) exempts equipment containing lithium ion batteries from the 1.2 meter drop test. But this outcome makes no sense. (In contrast, the ICAO Technical Instructions and IMDG Code, require such equipment be packed in strong outer packagings constructed of suitable material of adequate strength and design in relation to the packaging’s capacity and its intended use unless the battery is afforded equivalent protection by the equipment in which it is contained. *See* ICAO Technical Instructions Packing Instruction 967 and 970, Section II. This is another example of how the HMR will not be harmonized with the ICAO Technical Instructions and IMDG Code, but in fact would require less stringent packaging than currently is required by the international dangerous goods regulations.)⁴⁰

³⁸ 75 Fed. Reg. 1302, 1302 (Jan. 11, 2010).

³⁹ 75 Fed. Reg. 1302, 1308 (Jan. 11, 2010).

⁴⁰ The proposal also is inconsistent by not requiring revision of the warning label “LITHIUM BATTERIES—FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT” to indicate that “medium” cells and batteries are prohibited aboard vessels as well.

C. *Eliminating the exception for air shipments will increase, not reduce, the level of non-compliance with the HMR*

PHMSA asserts that “once lithium batteries are fully regulated, enforcement agencies will be able to take appropriate action against non-compliant shipments, reducing the number of non-compliant packages and therefore, reducing the number of lithium battery incidents.” 75 Fed. Reg. 1302, 1311 (Jan. 11, 2010). PHMSA apparently believes that by excessively regulating the millions of portable DVD players, laptops, cellular phones, cordless power tools and digital still and video cameras shipped into the U.S. every year by reputable companies, without incident,⁴¹ it will somehow reduce noncompliance by entities that are ignoring existing, lesser regulations.

This is obviously nonsense: entities that ignore existing, lesser regulations are not more likely to comply with more complicated regulations. Moreover, PHMSA has completely ignored what appears to be the largest current source of noncompliance, or to offer any regulations or strategy addressing this source. We refer to Internet sellers of products that contain lithium ion or lithium metal batteries. PRBA conducted a simple search on eBay.com in February 2010 and retrieved 3,442 sellers for “portable DVD players” and 48,875 sellers of laptop computers. Many offer next day air service. The Agency cannot reasonably expect all of these sellers to be fully-trained hazmat shippers, understand how to package, mark and label their packages as Class 9 hazardous materials, and complete a hazardous materials shipping paper. Many of these sellers are consumers with no knowledge of the hazardous materials regulations.

⁴¹ PHMSA has not identified, and PRBA is unaware of, even a single incident on an aircraft involving portable electronic equipment shipped from an original manufacturer.

Nor will the proposed rule “reduc[e] the number of non-compliant packages” currently being shipped, as PHMSA contends. 75 Fed. Reg. 1302, 1311 (Jan. 11, 2010). In fact, if implemented, the proposed rule will significantly increase the number of non-compliant packages that are shipped in violation of federal regulations – neither PHMSA, FAA, nor any other DOT agency has sufficient resources to enforce the regulations against Internet sellers who are unlikely to comply with the new regulations. This would not be reasonable or responsible decision-making.

7. Proposed Exception For “Very Low Energy” Cells and Batteries (p. 1311)

PHMSA is proposing an exception under Section 173.185(a)(4) for “very low energy” cells and batteries, with lithium content of not more than 0.3 grams or a Watt-hour rating of not more than 3.7 Wh, that are packed with or contained in equipment. Many PRBA members include small lithium metal cells in their products for memory backup, and the 0.3 grams exception proposed for lithium metal cells will appropriately avoid unnecessary regulation of those products.

Preliminarily, we note that applying the 3.7 Wh exemption to lithium ion cells and batteries would arbitrarily draw a line through the middle of the largest lithium ion market segment – the cellular phone industry – excepting some phones but not others. This would serve no safety purpose but would result in a highly confusing regulatory scheme that has a differential impact on competitors because of their product mix.

It is sensible for PHMSA rules to include exceptions for cellular phones and other small portable electronic equipment which contain or are packed with “very low energy” cells and batteries. However, those exceptions should be consistent with the exceptions found in the

ICAO Technical Instructions and IMDG Code. As proposed, they are not. To the contrary, they are arbitrarily different. For example, PHMSA would not subject small portable electronic equipment containing a lithium ion battery with a rating of 3.7 Wh or less to any marking, labeling, or shipping documentation requirements. As a result, a single package containing 1000 devices, each with an installed “low energy” lithium ion battery plus two spare lithium ion batteries for each device (for a total of 3,000 lithium ion batteries in a single package), could be loaded onto a passenger aircraft with no package markings, labels, or documents indicating the presence of the lithium ion batteries. The ICAO Technical Instructions and IMDG Code are far more restrictive for such consignments.

PRBA does not understand why an Agency so concerned about the safe transport of lithium ion batteries, and whose mission and goals include protecting people and the environment from the risks inherent in transportation of hazardous materials and harmonizing the requirements for hazardous materials transportation internationally, would include such a provision in the proposed rule.

8. Limitation on State of Charge (p. 1311)

PRBA has long supported a limitation on state of charge for some lithium ion cells and batteries shipped by air. Shipping at a lower state of charge further reduces the already-low risk of a fire in the event of significant damage to properly packaged products.

However, we believe that such a limitation should not apply to batteries and batteries packed with or contained in equipment shipped for military or medical applications. In those contexts, the limited additional benefit of mandatory reduced charge is overcome by the need for these products to work immediately when they reach their final destination. These batteries are

used in life-saving medical and military equipment, and placing a limit on state of charge may jeopardize lives. This point was repeatedly made at the March 5, 2010, public hearing on the proposal.

Another area in which state of charge requirements make no sense is with regard to batteries collected and shipped for recycling. These generally are at low states of charge. However, it would be impossible for used battery collection programs to know the state of charge of each battery placed in collection boxes used at schools, libraries, and federal and state buildings throughout the U.S. Moreover, these programs rarely, if ever, ship collected products by air. Therefore, these types of collection programs should be excepted from the state of charge limitations.

9. Limitations on the Number of Lithium Ion and Lithium Metal Battery Packages in a Single Aircraft, Compartment, Unit Load Device, or Overpack (p. 1312)

There is no reasonable basis to limit the number of lithium ion or lithium metal battery packages in a single aircraft, single compartment, unit load device, or overpack. The HMR already place strict weight restrictions on these packages; quantity limits for batteries packed with or installed in equipment; and a prohibition on shipping lithium metal batteries on passenger aircraft. These restrictions adequately address what we understand to be PHMSA's justification for this proposal, *i.e.*, to mitigate the consequences of a fire involving lithium ion and lithium metal batteries. Moreover, these limitations would be particularly difficult for airlines to implement and thus substantially limit cargo capacity that is vital to current electronic product distribution practices. *See* pp. ii, 30 & n. 30, *supra*. They likely would result in substantial shipment delays even when carriage is available, some of which could impact shipments of life-saving medical devices.

10. Consolidation of Lithium Battery Regulations into One Section of the HMR (pp. 1312-13)

It makes sense to consolidate the lithium battery regulations into one section of the HMR to make them easier to understand. Unfortunately, however, the changes proposed by PHMSA do not accomplish this goal. To the contrary, the proposed changes will make it more difficult for shippers to understand how to comply with the regulations because the changes are significant and, in many respects, inconsistent with the international dangerous goods regulations.

Moreover, PHMSA completed a major restructuring of these regulations only three years ago (in August 2007). Many companies are still in the process of adjusting their logistics operations to comply with that restructuring. Introducing major changes to the regulations now would frustrate those efforts. (As explained above, it would be virtually impossible to comply with the changes within 75 days of the final rule's publication.)

PRBA could support consolidation of the regulations into one section of the HMR only if an 18-month compliance timeline were provided in the final rule and the regulations were fully harmonized with the ICAO Technical Instructions and IMDG Code.

11. Required Hazardous Materials Training for Shippers of Excepted Lithium Ion and Lithium Metal Batteries and Equipment Containing Them (pp 1304-05)

PRBA recognizes the benefits of hazardous materials ("hazmat") training. However, we question the practicality of requiring hazmat training for every store-front and online retail employee who might offer a single lithium ion battery, a consumer electronic device incorporating a lithium ion battery, or a device incorporating a small consumer lithium metal coin cell, or for personnel who only occasionally ship these products. PRBA believes it would

be more prudent to harmonize with the ICAO Technical Instructions, which require employees shipping excepted cells or batteries to have “*adequate instruction on [the] requirements [of the regulations] commensurate with their responsibilities.*” See ICAO Technical Instructions, Packing Instructions 965 – 970, Section II.

If PHMSA concludes there is any need to add a further gloss to these international requirements, it should amend the proposed training requirement to include simplified requirements for shippers who need not receive more comprehensive training. Such a system has been efficiently used by the Rechargeable Battery Recycling Corporation in its Charge2Recycle® program, and expressly approved by PHMSA.

12. New Proper Shipping Names and UN Numbers for Lithium Ion and Lithium Metal Batteries (p. 1304)

PRBA supports the adoption of new proper shipping names and UN numbers for lithium ion and lithium metal batteries. These changes are consistent with the IMDG Code and ICAO Technical Instructions. In fact, they were originally proposed by PRBA at the July 2005 meeting of the UN Subcommittee of Experts on the Transport of Dangerous Goods and later adopted by the UN based on a proposal submitted in July 2006 from IFALPA. IFALPA noted in their proposal that “*The UN Manual of Tests and Criteria correctly observes that a lithium ion cell or battery is constructed with no metallic lithium in either electrode, making them much less chemically reactive, thus justifying distinct entries for lithium metal and lithium ion batteries.*” IFALPA also noted that providing distinct UN numbers and proper shipping names for lithium ion and lithium metal batteries “*is consistent with how UN numbers and proper shipping names are established under the Model Regulations. That is, dangerous goods are assigned UN numbers and proper shipping names “according to their hazard classification and their*

composition.” (See Section 2.0.2.1 of the UN Model Regulations.) The composition of lithium metal and lithium ion batteries are significantly different and therefore warrant separate UN numbers and shipping names.” These new UN numbers and proper shipping names went into effect on January 1, 2009, under the ICAO Technical Instructions and IMDG Code.

13. Adoption of Watt-hours in Place of Equivalent Lithium Content (p. 1309)

PRBA supports PHMSA’s proposal to adopt Watt-hours in place of equivalent lithium content (ELC) for lithium ion batteries. This change is consistent with the IMDG Code and ICAO Technical Instructions and was originally proposed by PRBA at the 2005 meeting of the UN Subcommittee of Experts on the Transport of Dangerous Goods. The UN agreed to adopt Watt-hours in place of ELC for the following reasons:

1. ELC is a term unique to the hazardous materials regulations and causes confusion and delay when questions arise about a battery’s size while it is in transport;
2. ELC is difficult to determine, making regulations difficult to comply with and enforce, potentially frustrating some shipments needlessly while other shipments in violation of the regulations move without detection;
3. For a battery, the use of the ampere-hour rating on the outside case can lead to an erroneous ELC value; and
4. Unlike ELC, Watt hour capacity is a widely used and understood metric for lithium ion cells and batteries and can be easily calculated from information already typically marked on a battery, ampere-hours and nominal voltage.

The measurement thus provides a much more convenient and understandable way to distinguish between lithium ion cells and batteries, which are subject to different regulatory requirements. It also is much easier to employ in the enforcement context.

14. Incorporation by Reference of Fifth Revised Edition of UN Manual of Tests and Criteria (p. 1308)

PRBA supports incorporation by reference of the Fifth Revised Edition of the UN Manual of Tests and Criteria. This edition contains amendments to lithium battery tests originally proposed by PRBA at the UN Subcommittee of Experts on the Transport of Dangerous Goods, which will facilitate testing of large format lithium ion batteries.

However, as noted in Section II.4 of these comments, above, we have concerns regarding relationships between this rulemaking and the January 1, 2011, effective date of the Fifth Revised Edition of the UN Manual of Tests and Criteria. In the event – as seems almost certainly will legally be necessary – that PHMSA realizes by late summer that this rulemaking will not be completed by year-end, PRBA requests that PHMSA initiate a separate rulemaking to incorporate the Fifth Revised Edition of the UN Manual of Tests and Criteria prior to the start of next year. This would enable PRBA members to test their cells and batteries to these new UN lithium battery testing requirements when they become effective internationally on January 1, 2011.

15. Authorization for Use of Lithium Battery Handling Label on Packages Containing Lithium Ion and Lithium Metal Batteries (and Equipment) When Offered as Class 9 Hazardous Materials (pp. 1311)

PHMSA's proposal to "authorize" the use of the lithium battery handling label on packages that are offered as fully-regulated, Class 9 lithium ion or lithium metal batteries or equipment containing them is misguided. The lithium battery handling label was adopted by ICAO to distinguish between shipments of fully-regulated hazardous materials and shipments offered under the exceptions found in Section II of Packing Instructions 965 – 970 of the ICAO Technical Instructions. If PHMSA includes a provision in the HMR that "authorizes" the use of

the lithium battery handling label, it will only further confuse shippers of these products and result in greater non-compliance.

III. PRBA'S COMMENTS ON OTHER KEY PROVISIONS OF THE PROPOSED RULE

1. Changes to UN Lithium Battery Testing Criteria – Proposed 49 C.F.R. § 173.185(a)(1)(i)(A)

This proposal would introduce a requirement for retesting of “lithium cells or batteries” when there is a change of 0.1 grams or 5% by mass to the cathode, to the anode, or to the electrolyte of an existing, tested design type. For “rechargeable lithium batteries,” the Agency proposes retesting of design types when there is a change in the nominal energy in Watt-hours or an increase in the nominal voltage of more than 5%.

PRBA opposes these changes. There is no factual basis or scientific theory to support them and they are wholly inconsistent with the international regulations that PHMSA is proposing to incorporate by reference into the HMR.

The Fifth Revised Edition of the UN Manual of Tests and Criteria, which PHMSA proposes to incorporate into the HMR, authorizes a change from a tested design type for *primary cells and batteries* of 0.1 grams or 20% by mass, *whichever is greater*, to the cathode, anode, or electrolyte without retesting. *See* UN Manual of Tests and Criteria, Fifth Revised Edition, § 38.3.2.1. PHMSA proposes to reduce the UN's trigger for retesting from 20% by mass to 5% by mass; but offers no justification – technical, safety, or otherwise – for the change. PHMSA simply states it believes a 20% threshold level is “too high.” 75 Fed. Reg. 1302, 1309 (Jan. 11, 2010).

The record in this rulemaking is devoid of any evidence that supports this statement, yet it is well-established that an Agency must have a rational basis for its decisions, *Transactive Corp. v. U.S.*, 91 F.3d 323, 236 (D.C. Cir. 1996), and that its conclusions must be supported by substantial evidence, *NRDC v. Herrington*, 768 F. 2d. 1355, 1407 (D.C. Cir. 1985). PHMSA's summary conclusion that the 20% threshold is "too high" satisfies neither of these criteria.

If this rule revision is required, the costs imposed on manufacturers to retool to meet the new specifications would be massive. These costs have received no attention from PHMSA.

PHMSA should abandon the proposed change to the retesting criteria or, at the very least, re-propose the change with a full explanation of why the 20% by mass threshold in the UN Manual of Tests and Criteria is "too high" and why the technical and safety data support a alternative percentage – by mass. To the extent such data do exist, PRBA has no doubt that the experts on the UN ad hoc lithium battery working group who will be meeting in Washington on May 18-20, 2010 would be happy to consider and comment on them.

Even if some technical basis for considering a change of this sort existed, however, many other factors would have to be considered before it was adopted. For example, the proposed retesting requirement would result in test criteria for the U.S. lithium battery market that are different from the UN test criteria used throughout the rest of the world. This lack of harmonization would increase the number of cell and battery designs subject to testing, at a substantial cost to manufacturers. PHMSA has failed to factor this cost into its analysis of the proposed rule. Furthermore, if PHMSA does not extend the compliance date or provide an exemption for existing cells and batteries that meet the UN testing criteria, it could produce a temporary shortage of cells and batteries for consumer electronic, medical, and military

equipment. Cell and battery manufacturers shipping to or from the U.S. would need to test certain cell and battery designs that were originally introduced into the marketplace because they met the 20% change in design criteria.) This would not serve the public interest.

PHMSA has not addressed any of these matters. It has failed to explain why the UN criteria is “unsafe” or why the criteria proposed by the Agency are “necessary in the public interest.” Yet these are the only grounds on which PHMSA may lawfully adopt regulations that are inconsistent with existing international standards or requirements. *See* pp. 9-11, *supra*; 49 U.S.C. § 5120(c).

Nor has PHMSA considered how the proposed retesting requirements relate to the requirements of the WTO and the TBT Agreement. As noted above, the TBT Agreement commits the U.S. to adopting technical regulations that do not create unnecessary barriers to trade and which are not “more trade-restrictive than necessary to fulfill a legitimate objective.”⁴² The TBT Agreement also provides that a country adopting a technical regulation – which the retesting requirements are – should use the international standard as the basis for the regulation unless the international standard would be “ineffective or inappropriate.”⁴³ PHMSA does not explain in the proposed rule why the UN testing criteria are ineffective or inappropriate. Nor does there appear to be any basis that it could. Lacking such an explanation, PHMSA’s divergence from the UN testing criteria would put the U.S. in non-compliance with its WTO commitments.

⁴² WTO TBT Agreement, Art. 2.2.

⁴³ *Id.*, Art. 2.4.

Finally, if the Agency ultimately were to decide, on an adequate record, to promulgate a retesting requirement, there are several aspects of the requirement that require clarification. For example, as currently worded it is unclear whether the mass change criterion of subsection (a)(1)(i)(A)(1) applies to lithium metal cells and batteries only, or to both lithium metal *and* lithium ion cells and batteries. Also, the mass change criterion of subsection (a)(1)(i)(A)(1) omits the clause “whichever is greater.” This clause appears in the UN tests because there are two criteria for determining change in design – “a change of 0.1 grams or 20% by mass, whichever is greater, to the cathode, to the anode or to the electrolyte.” Without the text “whichever is greater,” a miniscule change in the anode, cathode or electrolyte (greater than 0.1 grams) would require testing under the UN Manual of Tests and Criteria. In many cases, particularly for large format lithium ion and lithium metal cells, a change of more than 0.1 grams is within manufacturing tolerances. Therefore, the text “whichever is greater” should be inserted into the Agency’s proposed retesting requirement. Otherwise, any lithium ion or lithium metal cell or battery with a change of more than 0.1 grams to the cathode, anode, or electrolyte would be deemed a “different” design type that requires testing. The economic impact on lithium ion cell and battery manufacturers, particularly large format cell and battery manufacturers, would be enormous.

PHMSA also did not justify including in the proposed rule its list of design changes “that might be considered to differ from a tested type, such that it might lead to failure of any of the tests.” 75 Fed. Reg. 1302, 1322 (Jan. 11, 2010). This list of changes has been proposed for adoption in the UN Manual of Tests and Criteria and is still under discussion with the UN ad hoc lithium battery working group. This arbitrary proposal from PHMSA to unilaterally adopt this list of design changes before it has been formally approved by the UN Subcommittee is just

another example of how the U.S. HMR would not be harmonized with the international dangerous goods regulations.

In short, it would be arbitrary and capricious for PHMSA to promulgate a rule that sets new design type testing requirements without (1) explaining its rationale for adopting a mass change threshold and nominal voltage change threshold of 5% for retesting, and allowing further comment on that rationale, and (2) explaining why the UN testing criteria are unsafe, ineffective, or inappropriate.

2. New Definition for “Lithium Cell or Battery” – Proposed 49 C.F.R. § 171.8

PRBA opposes this proposed definition. PHMSA already is proposing new definitions for “Lithium ion cell or battery” and “Lithium metal cell or battery,” which are generally harmonized with the UN Manual of Tests and Criteria. PHMSA has offered no rationale for adding a third definition of “Lithium cell or battery,” and we see no benefit. It would simply add an unnecessary layer of complexity to an already confusing set of regulations and foster further confusion about the significant differences between lithium ion and lithium metal batteries.

3. Stowage of Lithium Ion Cells and Batteries and Equipment Packed with or Containing Them in Accessible Manner, Class C Cargo Compartment or FAA-Approved Container – Proposed 49 C.F.R. § 175.75

There is no rational basis for promulgation of aircraft stowage limitations on lithium ion batteries and equipment packed with or containing them. As explained above, these shipments present no extraordinary safety risk. Moreover, stringent package and weight limitations are already in effect. (The existing regulations include strict package weight restrictions for excepted and fully-regulated lithium ion and lithium metal batteries. The HMR also include

quantity limits for excepted and fully-regulated batteries packed with or installed in equipment and a prohibition on shipping excepted and fully-regulated lithium metal batteries on passenger aircraft.)

Moreover, the proposed stowage limitations will be almost impossible for airlines to implement. The burden on airlines of segregating packages containing lithium ion batteries or equipment packed with or containing them based on a UN number would be excessive. To avoid this burden and potential penalties for noncompliance, many airlines will simply ban these packages. Those that do not no doubt will increase shipping charges.

Even with increased prices, however, PRBA's members have been informed that 80 to 90% of existing airfreight capacity would be eliminated by these requirements. This, in turn, will require a complete redesign of supply chains, which rely largely on shipping by air, to move product by air (*e.g.*, computer notebooks without the batteries) and batteries via ocean. As the CAC/TranSystems report notes, computer and electronic manufacturers imported a total of 2.6 million metric tons of product in 2007, with shipment by air accounting for 20% of that total. Exhibit 2, § 3.3.2. All this trade and economic activity would be disrupted if the proposed stowage limitations were adopted.

4. Prohibition on Air Shipments of Damaged, Defective, or Recalled Batteries – Proposed 49 C.F.R. § 173.185(g)

PRBA recognizes PHMSA's concerns regarding the potential hazards some shipments of damaged, defective, or recalled batteries may present. However, the text proposed for Section 173.185(g) of the HMR is inexplicably inconsistent with a similar provision in the ICAO Technical Instructions. Special Provision A154 of the ICAO Technical Instructions prohibits defective batteries from air transport if the batteries have "*the potential of producing a*

dangerous evolution of heat, fire or short circuit,” but this clause was omitted by PHMSA.

Unless PHMSA can present a substantial rationale for this omission, its regulation should be identical to the pertinent international standards. PHMSA should amend proposed Section 173.185(g) to read as follows:

(g) *Damaged, defective, or recalled batteries.* Lithium cells or batteries that have been damaged, identified as defective, or are otherwise being returned to the manufacturer for safety reasons, and which have the potential of producing a dangerous evolution of heat, fire or short circuit, must be packaged in accordance with paragraph (a)(2) of this section. Inner packagings must be surrounded by cushioning material that is non-combustible, and non-conductive. Damaged, defective, or recalled batteries packaged in this manner must be transported by highway or rail only. Damaged, defective, or recalled batteries which do not have the potential of producing a dangerous evolution of heat, fire or short circuit are not subject to this provision.

This would allow companies to ship batteries by air that simply are not working to specifications, or are slightly damaged, but which pose no additional safety risk in transport. This option is necessary for many reasons but is most important for batteries designed for use in medical and military applications. For example, if a battery is not working to specifications in such life saving applications as defibrillators, it is critically important for the battery to be quickly returned to the manufacturer for analysis. Shipping by air is particularly important for international shipments when the only other option is by cargo vessel. If PHMSA disagrees, it must explain why a ban on air shipment of *all* damaged, defective, or recalled batteries would promote safe transport. Absent such an explanation, the proposed prohibition on air shipments of damaged, defective, or recalled batteries is subject to challenge under the APA as arbitrary and capricious agency action.

5. Exceptions for passengers, crewmembers and air operators – Proposed 49 C.F.R. § 175.10(a)(17)

PHMSA proposes several revisions in this provision that authorizes passengers, crewmembers and air operators to carry lithium ion and lithium metal batteries and portable electronic equipment powered by them on passenger aircraft. We support the Agency's proposed provision that spare lithium ion and lithium metal batteries be of a type proven to meet the requirements of each test in the UN Manual of Tests and Criteria and in fact recommended to FAA that this be included in the proposed rule. It also is consistent with the ICAO Technical Instructions.

However, PHMSA is proposing a provision that is less stringent than similar provisions contained in the ICAO Technical Instructions. For example, PHMSA is proposing to authorize lithium ion batteries with up to 300 Watt-hours to be carried onboard the aircraft. ICAO limits these batteries to 160 Watt-hours and requires authorization of the airline if the battery is over 100 Watt-hours. We believe this should be changed to harmonize with the ICAO Technical Instructions.

PHMSA also has included a confusing provision that appears to prohibit spare "dry cells and batteries" (*e.g.*, alkaline, nickel cadmium, nickel metal hydride) from being placed in checked baggage. It's not clear whether this was PHMSA's intent but request clarification from the Agency on whether dry cell batteries in fact would be prohibited from checked baggage. We believe this would be an impossible provision to enforce considering the millions of alkaline batteries purchased by consumers every year in the U.S. and is unnecessary in light of the battery's low voltage.

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PRBA appreciates the opportunity to express its views and would welcome the opportunity to meet with PHMSA and discuss in detail the foregoing specific comments and issues. If you have any questions or need additional information, please contact George Kerchner, PRBA Executive Director, at (202) 719-4109, or David B. Weinberg, PRBA Legal Counsel, at (202) 719-7102.

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