# Why We Are Here

- We are concerned about transportation safety.
- PHMSA/FAA underestimated potential impact of January 11 proposal. OMB and other agencies unaware until its publication.
- Extensive, substantive comments filed in March. Almost all 120 public comments filed opposed proposal and called for adoption of internationally-consistent rules. Comments also provided substantial documentation challenging PHMSA/FAA analysis.
- Until recently, all indications were that PHMSA/FAA were proceeding to review comments received and consider them.
- AP and WSJ have reported an emergency "interim final rule" is coming, because of Dubai incident.
- Our inquiries confirm PHMSA working on something, but nothing more.
- EO 12688 provides exception from OMB and interagency review only in "emergency" situations.

# What is the Lithium Ion Battery Safety Issue?

- Safety is industry's number one priority.
- Rechargeable batteries in consumer electronics contain no metallic lithium.
- Rechargeable lithium ion batteries, if overheated, can expel a small amount of flammable vapor.
- Overheating can result from short circuit, overcharging or external sources.
- In cargo transport, external sources are principal concern.
- DOT testing shows that fires involving lithium ion batteries are readily controlled with standard fire suppression equipment.
- Test data submitted to PHMSA/FAA in March shows that if laptops are caught in a fire, no difference in temperature and heat flux regardless of whether they do or do not have batteries in/with them. 90+% of energy release in burning packaged laptops comes from packaging, plastic, etc., not batteries.
- The issue is not whether regulation is required, but whether U.S. adoption of the updated regulations now in place in the rest of the world would better than what PHMSA/FAA has proposed.

# PHMSA/DOT Are Behind the Rest of the World in Assuring Safety

- There have been "battery incidents" in air transportation, but their severity varies considerably.
- FAA's "incident" list doesn't include enough information to be absolutely sure, but none of the 13 cargo "incidents" involving lithium ion batteries appears to have involved shipments in compliance with existing rules.
- Nonetheless, lithium/lithium-ion batteries have been a major focus of UN and ICAO panels since 2006.
- That attention resulted in adoption of specific, strict recommendations/regulations in 2009.
- U.S. sought additional requirements but was rebuffed by other national experts.
- All nations but US since have adopted the 2009 regulations/recommendations.

# Potential Impacts of Inconsistent US Rules

- Inconsistency means less safety.
- U.S. rules mean more cost, disruption of supply chains, disadvantage to U.S. carriers.
  - 340 million notebooks, cellular phones, and digital still and video cameras were shipped to U.S. in 2009
  - ❖ Over 70% imported by air
  - Trade value of all imported electronic products with lithium ion batteries exceeds \$100 billion
- Likely violation of WTO TBT Agreement will hurt U.S. position on other issues.

# Direct Economic Impact of Proposed Lithium Battery Rule

- PHMSA overall economy -\$9.3 M
- Medtronic one company \$100 M
- ❖ UPS one company \$263 M
- PRBA overall economy \$1.1 B



## NEMA Dry Battery Section – PHMSA Proposed Rule on Transportation of Lithium Batteries – October 2010

Many requirements in the Proposed Rule would place a significant and undue burden on U.S. industry without measurably improving safety of pilots, crew, passengers and cargo on aircraft over and above that resulting from the existing requirements. PHMSA's proposals in the NPRM rely on conjectures, assumptions, inadequate technical work and testing, and a flawed cost-benefit analysis.

## PHMSA Cost-Benefit Analysis and Regulatory Flexibility Analysis

As stated previously in our formal comments on the NPRM, the regulatory and cost analyses performed by PHMSA are woefully inadequate and produced estimates that are incomplete and severely understated.

In summary, the PHMSA analysis produced a first year cost of compliance with the proposed rule of \$9.4 million. This contrasts sharply with good faith estimates of the primary battery industry alone. NEMA conducted an economic survey of its battery companies on the cost impact of many of the proposed regulatory elements:

Alone, without even factoring in costs of their customers – including the many industries that use lithium metal batteries in their devices – the survey found that the primary battery industry's first-year costs of compliance would exceed \$22 million.

The costs to manufacturers of products and equipment that contain or are packed with primary lithium batteries would far exceed the impact on battery manufacturers alone.

### Compliance Deadlines

PHMSA's proposed 75-day compliance deadline is unfeasible, unworkable, and impossible. To better achieve its own objectives, for any final rule PHMSA should revert to previous practice and allow 18-24 months for compliance. Given PHMSA's resource challenges in enforcing its current regulations, we would expect that PHMSA would also need a significantly longer period than 75 days in order to prepare itself to implement and enforce a new rule.

Contact: Craig Updyke, 703 841 3294, cra updyke@nema.org

NEMA is the association of electrical and medical imaging equipment manufacturers. Founded in 1926 and headquartered near Washington, D.C., its approximately 450 member companies, over 70% of which are small and medium companies, manufacture products used in the generation, transmission and distribution, control, and end use of electricity. These products are used in utility, industrial, commercial, institutional, and residential applications. The association's Medical Imaging & Technology Alliance (MITA) Division represents manufacturers of cutting-edge medical diagnostic imaging equipment including MRI, CT, x-ray, and ultrasound products. Worldwide sales of NEMA-scope products exceed \$120 billion. In addition to its headquarters in Rosslyn, Virginia, NEMA also has offices in Beijing and Mexico City.



## NEMA Dry Battery Section – PHMSA Proposed Rule on Transportation of Lithium Batteries – October 2010

Many requirements in the Proposed Rule would place a significant and undue burden on U.S. industry without measurably improving safety of pilots, crew, passengers and cargo on aircraft over and above that resulting from the existing requirements. PHMSA's proposals in the NPRM rely on conjectures, assumptions, inadequate technical work and testing, and a flawed cost-benefit analysis.

## PHMSA Cost-Benefit Analysis and Regulatory Flexibility Analysis

As stated previously in our formal comments on the NPRM, the regulatory and cost analyses performed by PHMSA are woefully inadequate and produced estimates that are incomplete and severely understated.

In summary, the PHMSA analysis produced a first year cost of compliance with the proposed rule of \$9.4 million. This contrasts sharply with good faith estimates of the primary battery industry alone. NEMA conducted an economic survey of its battery companies on the cost impact of many of the proposed regulatory elements:

Alone, without even factoring in costs of their customers – including the many industries that use lithium metal batteries in their devices – the survey found that the primary battery industry's first-year costs of compliance would exceed \$22 million.

The costs to manufacturers of products and equipment that contain or are packed with primary lithium batteries would far exceed the impact on battery manufacturers alone.

### Compliance Deadlines

PHMSA's proposed 75-day compliance deadline is unfeasible, unworkable, and impossible. To better achieve its own objectives, for any final rule PHMSA should revert to previous practice and allow 18-24 months for compliance. Given PHMSA's resource challenges in enforcing its current regulations, we would expect that PHMSA would also need a significantly longer period than 75 days in order to prepare itself to implement and enforce a new rule.

Contact: Craig Updyke, 703 841 3294, cra updyke@nema.org

NEMA is the association of electrical and medical imaging equipment manufacturers. Founded in 1926 and headquartered near Washington, D.C., its approximately 450 member companies, over 70% of which are small and medium companies, manufacture products used in the generation, transmission and distribution, control, and end use of electricity. These products are used in utility, industrial, commercial, institutional, and residential applications. The association's Medical Imaging & Technology Alliance (MITA) Division represents manufacturers of cutting-edge medical diagnostic imaging equipment including MRI, CT, x-ray, and ultrasound products. Worldwide sales of NEMA-scope products exceed \$120 billion. In addition to its headquarters in Rosslyn, Virginia, NEMA also has offices in Beijing and Mexico City.

# Lithium ion Batteries (Small, excepted) 20 Wh per cell / 100 Wh per battery

ICAO TI

Package size 10 kg G

Marking/label and All consignments documentation

1.2 m drop test All consignments

Instructions to employees Yes

# Lithium Metal Batteries (Small, excepted) 1 g per cell / 2 g per battery

ICAO TI

Package size 2.5 kg G

Marking/label and documentation

All consignments

1.2 m drop test All consignments

Instructions to employees

Yes

# Lithium Metal Batteries Packed with/Contained in Equipment (Small, excepted) 1 g per cell / 2 g per battery

# ICAO TI

Package size

No weight limit, but no more

than 2 spare batteries per package

Marking/label and documentation

All consignments

1.2 m drop test

Yes (only when packed with

equipment)

Instructions to employees

Yes

# Lithium ion Batteries Packed with/Contained in Equipment (Small, excepted) 20 Wh per cell/100 Wh per battery

# ICAO TI

Package size No weight limit, but no more

than 2 spare batteries per package

Marking/label and documentation

All consignments

1.2 m drop test

Yes (only when packed with

equipment)

Instructions to employees

Yes

|   |          | Interna    | tional  |       |             | Domestic    |       | Combined     |
|---|----------|------------|---------|-------|-------------|-------------|-------|--------------|
|   | Imports  | Re-Exports | Exports | Total | U.S. Origin | Transfer    | Total | Total*       |
| Cellphones & Related Products               |          |            |         |       |             |             |       |              |
| Number of Units (millions) Share of Imports | 218.6    | 8.4        | 11.2    | 238.1 |             | 43.7<br>20% | 43.7  | 229.7        |
| Number of Shipments (000)                   | 348.0    | 105.2      | 139.9   | 593.1 |             | 348.0       | 348.0 | 941.2        |
| Value (million \$)                          | \$37,542 | \$3,732    | \$5,482 | 000.1 |             | \$7,508     | 040.0 | \$43,024     |
| Value per Unit                              | \$172    | \$444      | 5491    |       |             | \$172       |       | \$172        |
| Weight (000 MT)                             | 119.2    | 11.7       | 15.6    | 146.6 |             | 23.8        | 23.8  | 134.8        |
| Average Shipment Weight (kilograms)         | 342.5    | 111.6      | 111.6   | Landa |             | 68.5        | 2415  | ,,,,,,,      |
| Percent Affected by Rule                    | 50%      | 50%        | 50%     |       |             | 60%         |       |              |
| Number of Affected Units (millions)         | 109.3    | 4.2        | 5.6     | 119.1 |             | 26.2        | 26.2  | 114.9        |
| Number of Affected Shipments (000)          | 174.0    | 52.6       | 69.9    | 296.6 |             | 208.8       | 208.8 | 505.4        |
| Packaging Impact                            |          |            |         |       |             |             |       |              |
| Unit Cost                                   | \$1.25   | \$0.00     | \$1.25  |       |             | \$0.00      |       |              |
| Units per Package                           | 2.05     | 1.00       | 2.05    |       |             | 1.00        |       |              |
| Total Cost Impact (million \$)              | \$67     | \$0        | \$3     | \$70  |             | \$0         | \$0   | \$70         |
| Transport and Related Services Impacts      |          |            |         |       |             |             |       |              |
| Per Shipment Fee                            | \$35     | \$35       | \$35    |       |             | \$35        |       |              |
| Per Kilogram Surcharge                      | \$1.50   | \$1.50     | \$1.50  |       |             | \$1.50      |       |              |
| Share with Kilogram Surcharge               | 75%      | 75%        | 75%     |       |             | 10%         |       |              |
| Weighted Cost Impact Per Shipment           | \$420    | \$161      | \$161   |       |             | \$45        |       |              |
| Total Cost Impact (million \$)              | \$73     | \$8        | \$11    | \$93  |             | \$9         | 59    | \$103        |
| Ratio of Other Services                     |          |            |         |       |             |             |       | 249<br>\$127 |
| Inventory Cost Impacts                      |          |            |         |       |             |             |       | 5121         |
| Average Delay per Shipment (days)           | 1.00     | 1.00       | 1,00    |       |             | 0.50        |       |              |
| Value of Time Saving per Day                | 0.9%     | 0.9%       | 0.9%    |       |             | 0.9%        |       |              |
| Total Cost Impact (million \$)              | \$169    | \$17       | \$25    | \$210 |             | \$20        | \$20  | \$23         |
| Training Impacts                            |          |            |         |       |             |             |       |              |
| Ratio of Employees per 1,000 Shipments      |          |            |         |       |             |             |       | 10.0         |
| Total Employees                             |          |            |         |       |             |             |       | 5,054        |
| Cost per Employee                           |          |            |         |       |             |             |       | \$400        |
| Total Cost Impact (million \$)              |          |            |         |       |             |             |       | \$2.0        |
| Combined Cost Impacts                       |          |            |         |       |             |             |       |              |
| Total Cost Impact (million \$)              | \$309    | \$25       | \$39    | \$373 |             | \$30        | \$30  | \$42         |
| per Unit *                                  | \$1.41   | \$4.42     | 57.93   |       |             | \$2.09      |       | \$1.8        |
| % of Unit Value                             | 0.8%     |            | 1.6%    |       |             | 1.2%        |       | 1.09         |
| Lost Sales Impacts (at 1,0 elasticity)*     |          |            |         |       |             |             |       |              |
| Number of Units (millions)                  | 1.4      |            | 0.2     | 1.6   |             | 0.5         | 0.5   | 2.2          |
| Sales (million \$)                          | \$216    | \$37       | \$89    | \$342 |             | 591         | 591   | S43          |

<sup>\*</sup> Adjusted for imports that are transshipped to domestic or foreign markets.

|  |          | Interna    | tional  |       |             | Domestic |       | Combined |
|--|----------|------------|---------|-------|-------------|----------|-------|----------|
|  | Imports  | Re-Exports | Exports | Total | U.S. Origin | Transfer | Total | Total*   |
| 2. Notebook and Handheld Computers     |          |            |         |       |             |          |       |          |
| Number of Units (millions)             | 38.1     | 2.1        | 2.2     | 42.4  |             | 7.6      | 7.6   | 40.3     |
| Share of Imports                       |          |            |         |       |             | 20%      |       |          |
| Number of Shipments (000)              | 256.7    | 42.3       | 44.6    | 343.6 |             | 256.7    | 256.7 | 600.3    |
| /alue (million \$)                     | \$23,321 | \$1,584    | \$1,166 |       |             | \$4,664  |       | \$24,487 |
| /alue per Unit                         | \$613    | \$750      | \$523   |       |             | \$613    |       | \$613    |
| Veight (000 MT)                        | 146.1    | 7.8        | 8.2     | 162.1 |             | 29.2     | 29.2  | 154.3    |
| Average Shipment Weight (kilograms)    | 569.2    | 183.7      | 183.7   |       |             | 113.8    |       |          |
| Percent Affected by Rule               | 50%      | 50%        | 50%     |       |             | 75%      |       |          |
| Number of Affected Units (millions)    | 19.0     | 1.1        | 1.1     | 21.2  |             | 5.7      | 5.7   | 20.1     |
| Number of Affected Shipments (000)     | 128.4    | 21.1       | 22.3    | 171.8 |             | 192,5    | 192.5 | 364.4    |
| Packaging Impact                       |          |            |         |       |             |          |       |          |
| Unit Cost                              | \$1.25   | \$0.00     | \$1.25  |       |             | \$0.00   |       |          |
| Units per Package                      | 1.00     | 1.00       | 1.00    |       |             | 1.00     |       |          |
| Total Cost Impact (million \$)         | \$24     | \$0        | \$1     | \$25  |             | \$0      | \$0   | \$25     |
| ransport and Related Services Impacts  |          |            |         |       |             |          |       |          |
| Per Shipment Fee                       | \$35     | \$35       | \$35    |       |             | \$35     |       |          |
| Per Kilogram Surcharge                 | \$1.50   | \$1.50     | \$1.50  |       |             | \$1.50   |       |          |
| Share with Kilogram Surcharge          | 75%      |            | 75%     |       |             | 10%      |       |          |
| Weighted Cost Impact Per Shipment      | \$675    |            | \$242   |       |             | \$52     |       |          |
| Total Cost Impact (million \$)         | \$87     | \$5        | \$5     | \$97  |             | \$10     | \$10  | \$107    |
| Ratio of Other Services                | 4.50     |            | 22      | 931   |             | 2.5      | 200   | 24%      |
| nventory Cost Impacts                  |          |            |         |       |             |          |       | \$133    |
| Average Delay per Shipment (days)      | 1.00     | 1.00       | 1.00    |       |             | 0.50     |       |          |
| Value of Time Saving per Day           | 0.5%     | 0.5%       | 0.5%    |       |             | 0.5%     |       |          |
| Total Cost Impact (million \$)         | \$58     |            | \$3     | \$65  |             | \$9      | \$9   | \$74     |
| Fraining Impacts                       |          |            |         |       |             |          |       |          |
| Ratio of Employees per 1,000 Shipments |          |            |         |       |             |          |       | 10.0     |
| Total Employees                        |          |            |         |       |             |          |       | 3,644    |
| Cost per Employee                      |          |            |         |       |             |          |       | \$400    |
| Total Cost Impact (million \$)         |          |            |         |       |             |          |       | \$1.5    |
| Combined Cost Impacts                  |          |            |         |       |             |          |       |          |
| Total Cost Impact (million S)          | \$169    | 59         | \$10    | \$188 |             | \$19     | \$19  | \$233    |
| per Unit *                             | \$4.43   |            | \$13.08 | 2075  |             | \$6.90   | 7,05  | \$5.79   |
| % of Unit Value                        | 0.7%     |            | 2.5%    |       |             | 1.1%     |       | 1.0%     |
| ost Sales Impacts (at 1.0 elasticity)* |          |            |         |       |             |          |       |          |
| Number of Units (millions)             | 0.2      | 0.0        | 0.1     | 0.3   |             | 0.1      | 0.1   | 0.4      |
| Sales (million \$)                     | \$124    | S18        | \$29    | \$171 |             | \$53     | \$53  | \$224    |

<sup>\*</sup> Adjusted for imports that are transshipped to domestic or foreign markets.

|   |         | Interna    | tional  |       | Domestic             |       | Combined    |
|---|---------|------------|---------|-------|----------------------|-------|-------------|
|   | Imports | Re-Exports | Exports | Total | U.S. Origin Transfer | Total | Total*      |
| 3. Audio & Video Equipment                  |         |            |         |       |                      |       |             |
| Number of Units (millions) Share of Imports | 99.6    | 3.8        | 3.9     | 107.2 | 19.9<br>20%          | 19.9  | 103.5       |
| Number of Shipments (000)                   | 118.3   | 18,3       | 18.8    | 155.4 | 118.3                | 118.3 | 273.7       |
| Value (million \$)                          | \$9,041 |            | \$564   | 100.1 | \$1,808              | 110.0 | \$9,60      |
| Value per Unit                              | \$91    |            | \$146   |       | \$91                 |       | \$9         |
| Weight (000 MT)                             | 53.0    | 2.6        | 2.6     | 58,2  | 10.6                 | 10.6  | 55.7        |
| Average Shipment Weight (kilograms)         | 448.2   | 139.8      | 139.8   |       | 89.6                 |       |             |
| Percent Affected by Rule                    | 50%     | 50%        | 50%     |       | 60%                  |       |             |
| Number of Affected Units (millions)         | 49.8    | 1,9        | 1.9     | 53.6  | 12,0                 | 12.0  | 51.7        |
| Number of Affected Shipments (000)          | 59.2    | 9.1        | 9.4     | 77.7  | 71.0                 | 71.0  | 148.7       |
| Packaging Impact                            |         |            |         |       |                      |       |             |
| Unit Cost                                   | \$1.25  | \$0.00     | \$1.25  |       | \$0.00               |       |             |
| Units per Package                           | 1.00    | 1.00       | 1.00    |       | 1.00                 |       |             |
| Total Cost Impact (million \$)              | \$62    | :\$0       | 52      | \$65  | \$0                  | \$0   | \$65        |
| Transport and Related Services Impacts      |         |            |         |       |                      |       |             |
| Per Shipment Fee                            | \$35    | \$35       | \$35    |       | \$35                 |       |             |
| Per Kilogram Surcharge                      | \$1.50  | \$1.50     | \$1.50  |       | \$1.50               |       |             |
| Share with Kilogram Surcharge               | 75%     |            | 75%     |       | 10%                  |       |             |
| Weighted Cost Impact Per Shipment           | \$539   | \$192      | \$192   |       | 548                  |       |             |
| Total Cost Impact (million \$)              | \$32    | \$2        | \$2     | \$35  | \$3                  | \$3   | \$39        |
| Ratio of Other Services                     |         |            |         |       |                      |       | 249<br>\$48 |
| Inventory Cost Impacts                      |         |            |         |       |                      |       | 4.0         |
| Average Delay per Shipment (days)           | 1.00    | 1.00       | 1.00    |       | 0.50                 |       |             |
| Value of Time Saving per Day                | 0.9%    | 0.9%       | 0.9%    |       | 0.9%                 |       |             |
| Total Cost Impact (million \$)              | \$41    | 53         | \$3     | \$46  | \$5                  | \$5   | \$51        |
| Training Impacts                            |         |            |         |       |                      |       |             |
| Ratio of Employees per 1,000 Shipments      |         |            |         |       |                      |       | 10.0        |
| Total Employees                             |         |            |         |       |                      |       | 1,487       |
| Cost per Employee                           |         |            |         |       |                      |       | \$400       |
| Total Cost Impact (million \$)              |         |            |         |       |                      |       | \$0.6       |
| Combined Cost Impacts                       |         |            |         |       |                      |       |             |
| Total Cost Impact (million \$)              | \$135   | \$4        | \$7     | \$146 | \$8                  | \$8   | \$16        |
| per Unit *                                  | \$1.35  | \$2.53     | \$4.28  |       | \$1.77               |       | \$1.5       |
| % of Unit Value                             | 1.5%    | 1.6%       | 2.9%    |       | 2.0%                 |       | 1.79        |
| Lost Sales Impacts (at 1.0 elasticity)*     |         |            |         |       |                      |       |             |
| Number of Units (millions)                  | 1.1     |            | 0.1     | 1.3   | 0.4                  | 0.4   | 1.7         |
| Sales (million \$)                          | \$99    | \$9        | S17     | \$125 | \$35                 | \$35  | \$160       |

<sup>\*</sup> Adjusted for imports that are transshipped to domestic or foreign markets.

|  |         | Interna    | tional    |       |             | Domestic |       | Combined |
|--|---------|------------|-----------|-------|-------------|----------|-------|----------|
|  | Imports | Re-Exports | Exports   | Total | U.S. Origin | Transfer | Total | Total*   |
| 4. Hand Power Tools  |         |            |           |       |             |          |       |          |
| Number of Units (millions)   | 0.7     | 0.1        | 0.1       | 0.8   |             | 0.3      | 0.3   | 0.7      |
| Share of Imports   |         | 4.5        |           |       |             | 50%      | 20.0  | 200      |
| Number of Shipments (000)  | 4.1     | 0.5        | 0.6       | 5.2   |             | 10.2     | 10.2  | 15.4     |
| Value (million \$)   | \$53    | \$3        | \$10      |       |             | \$27     |       | \$63     |
| Value per Unit   | \$78    | \$51       | \$182     |       |             | \$78     |       | \$78     |
| Weight (000 MT)  | 1.3     | 0.3        | 0.3       | 1.8   |             | 0.6      | 0.6   | 1.6      |
| Average Shipment Weight (kilograms)  | 316.6   | 489.3      | 489.3     |       |             | 63.3     |       |          |
| Percent Affected by Rule   | 50%     | 50%        | 50%       |       |             | 60%      |       |          |
| Number of Affected Units (millions)  | 0.3     | 0.0        | 0.0       | 0.4   |             | 0.2      | 0.2   | 0.4      |
| Number of Affected Shipments (000)   | 2.0     | 0.3        | 0.3       | 2.6   |             | 6.1      | 6.1   | 8.7      |
| Packaging Impact   |         |            |           |       |             |          |       |          |
| Unit Cost  | \$1.75  | \$1.75     | \$1.75    |       |             | \$1.75   |       |          |
| Units per Package  | 1.00    | 1.00       | 1.00      |       |             | 1.00     |       |          |
| Total Cost Impact (million \$)   | \$1     | \$0        | \$0       | \$1   |             | \$0      | \$0   | S1       |
| Transport and Related Services Impacts   |         |            |           |       |             |          |       |          |
| Per Shipment Fee   | \$35    | \$35       | \$35      |       |             | \$35     |       |          |
| Per Kilogram Surcharge   | \$1.50  | \$1.50     | \$1.50    |       |             | \$1.50   |       |          |
| Share with Kilogram Surcharge  | 75%     | 75%        | 75%       |       |             | 10%      |       |          |
| Weighted Cost Impact Per Shipment  | \$391   | \$585      | \$585     |       |             | \$44     |       |          |
| Total Cost Impact (million \$)   | \$0.8   | \$0.2      | \$0.2     | \$1.1 |             | 50.3     | \$0.3 | \$1.4    |
| Ratio of Other Services  | 37.5    | 47,141     |           |       |             |          |       | 24%      |
| Inventory Cost Impacts   |         |            |           |       |             |          |       | \$2      |
| Average Delay per Shipment (days)  | 1.00    | 1.00       | 1.00      |       |             | 0.50     |       |          |
| Value of Time Saving per Day   | 0.5%    | 0.00       | 0.5%      |       |             | 0.5%     |       |          |
| Total Cost Impact (million \$)   | 50      |            | \$0       | \$0   |             | SO       | SO    | \$0      |
| Training Impacts   |         |            |           |       |             |          |       |          |
| Ratio of Employees per 1,000 Shipments   |         |            |           |       |             |          |       | 10.0     |
| Total Employees  |         |            |           |       |             |          |       | 87       |
| Cost per Employee  |         |            |           |       |             |          |       | \$400    |
| Total Cost Impact (million \$)   |         |            |           |       |             |          |       | \$0.0    |
| Combined Cost Impacts  |         |            |           |       |             |          |       |          |
| Total Cost Impact (million \$)   | S2      | 50         | SO        | \$2   |             | 51       | \$1   | \$3      |
| And the second s | 100     |            | \$10.84   | 92    |             |          | 31    |          |
| per Unit *   | \$2.25  |            | A 10.00 C |       |             | \$4.22   |       | \$4.11   |
| % of Unit Value  | 2.9%    | 12.6%      | 6.0%      |       |             | 5.4%     |       | 4.8%     |
| Lost Sales Impacts (at 1.0 elasticity)*  | Sec.    | -          |           |       |             |          | 66    |          |
| Number of Units (millions)   | 0.0     | 0.0        | 0.0       | 0.0   |             | 0.0      | 0.0   | 0.0      |
| Sales (million \$)   | 51      | 50         | 51        | \$2   |             | \$1      | 51    | \$3      |

<sup>\*</sup> Adjusted for imports that are transshipped to domestic or foreign markets.

|   |         | International | onal    |       | Domestic             |       | Combined |
|---|---------|---------------|---------|-------|----------------------|-------|----------|
|   | Imports | Re-Exports    | Exports | Total | U.S. Origin Transfer | Total | Total*   |
| 5. Other Electronic Goods               |         |               |         |       |                      |       |          |
| Number of Units (millions)              | 30.8    | 1.7           | 3.6     | 36.0  | 6.2                  | 62    | 34.4     |
| Share of Imports                        |         |               |         |       | 20%                  |       |          |
| Number of Shipments (000)               | 104.9   | 27.1          | 58.4    | 190.4 | 104.9                | 104.9 | 295.2    |
| Value (million S)                       | \$2,633 | 2620          | \$1,373 |       | 2527                 |       | \$4,007  |
| Value per Unit                          | \$85    | \$375         | \$386   |       | 585                  |       | 385      |
| Weight (000 MT)                         | 19,3    | 3.9           | 8.3     | 31.5  | 3.9                  | 3,9   | 27.7     |
| Average Shipment Weight (kilograms)     | 184.3   | 142.9         | 142.9   |       | 36.9                 |       |          |
| Percent Affected by Rule                | 20%     | 20%           | %05     |       | %09                  |       |          |
| Number of Affected Units (millions)     | 15.4    | 8'0           | 1.8     | 18.0  | 3.7                  | 3.7   | 17.2     |
| Number of Affected Shipments (000)      | 52.4    | 13.5          | 29.2    | 95.2  | 62.9                 | 62.9  | 158,1    |
| Packaging Impact                        |         |               |         |       |                      |       |          |
| Unit Cost                               | \$1.25  | \$0.00        | \$1.25  |       | \$0.00               |       |          |
| Units per Package                       | 1.00    | 1.00          | 1.00    |       | 1.00                 |       |          |
| Total Cost Impact (million \$)          | 818     | 20            | \$2     | \$21  | 80                   | So    | \$21     |
| Transport and Related Services Impacts  |         |               |         |       |                      |       |          |
| Per Shioment Fee                        | \$35    | \$35          | \$35    |       | \$35                 |       |          |
| Per Kilogram Surcharge                  | \$1.50  | \$1.50        | \$1.50  |       | \$1,50               |       |          |
| Share with Kilogram Surcharge           | 75%     | 75%           | 75%     |       | 10%                  |       |          |
| Weighted Cost Impact Per Shipment       | \$242   | \$196         | 5196    |       | 541                  |       |          |
| Total Cost Impact (million S)           | \$13    | 23            | 28      | \$21  | \$3.                 | 23    | 524      |
| Ratio of Other Services                 |         |               |         |       |                      |       | 24%      |
| Inventory Cost Impacts                  |         |               |         |       |                      |       | 978      |
| Average Delay per Shipment (days)       | 1.00    | 1.00          | 1.00    |       | 0.50                 |       |          |
| Value of Time Saving per Day            | %6.0    | %6.0          | %6.0    |       | %6.0                 |       |          |
| Total Cost Impact (million S)           | \$12    | Z             | 28      | \$21  | 15                   | 55    | \$22     |
| Training Impacts                        |         |               |         |       |                      |       |          |
| Ratio of Employees per 1,000 Shipments  |         |               |         |       |                      |       | 10.0     |
| Total Employees                         |         |               |         |       |                      |       | 1,581    |
| Cost per Employee                       |         |               |         |       |                      |       | \$400    |
| Total Cost Impact (million S)           |         |               |         |       |                      |       | \$0.6    |
| Combined Cost Impacts                   |         |               |         |       |                      |       |          |
| Total Cost Impact (million S)           | 844     | \$5           | \$14    | \$63  | \$4                  | \$4   | \$74     |
| per Unit *                              | \$1,42  | \$4.72        | \$8,68  |       | \$2.07               |       | \$2.14   |
| % of Unit Value                         | 1.7%    | 1.3%          | 2.3%    |       | 2.4%                 |       | 1.8%     |
| Lost Sales Impacts (at 1.0 elasticity)* |         |               |         |       |                      |       |          |
| Number of Units (millions)              | 0.4     | 0.0           | 0.1     | 0.5   | 0.1                  | 0.1   | 9.0      |
| Sales (million S)                       | \$25    | 88            | \$31    | \$63  | \$13                 | \$13  | 826      |
|   |         |               |         |       |                      |       |          |

Adjusted for imports that are transshipped to domestic or foreign markets.

|   |         | Interna    | tional  |       |             | Domestic    |       | Combined    |
|---|---------|------------|---------|-------|-------------|-------------|-------|-------------|
|   | Imports | Re-Exports | Exports | Total | U.S. Origin | Transfer    | Total | Total*      |
| 6. Lithium Ion Batteries                    |         |            |         |       |             |             |       |             |
| Number of Units (millions) Share of Imports | 46.8    |            |         | 46.8  |             | 23.4<br>50% | 23.4  | 46.8        |
| Number of Shipments (000)                   | 18.2    |            | -       | 18.2  |             | 45.6        | 45.6  | 63.8        |
| Value (million \$)                          | \$507   | \$0        | \$0     |       |             | \$254       | 1     | \$507       |
| Value per Unit                              | \$11    | \$0        | \$0     |       |             | \$11        |       | \$11        |
| Weight (000 MT)                             | 10.1    |            |         | 10.1  |             | 5.0         | 5.0   | 10.1        |
| Average Shipment Weight (kilograms)         | 553.4   |            |         |       |             | 110.7       |       |             |
| Percent Affected by Rule                    | 75%     | 75%        | 75%     |       |             | 90%         |       |             |
| Number of Affected Units (millions)         | 35.1    |            | 12      | 35.1  |             | 21.1        | 21.1  | 35.1        |
| Number of Affected Shipments (000)          | 13.7    | 9          | -       | 13.7  |             | 41.0        | 41.0  | 54.7        |
| Packaging Impact                            |         |            |         |       |             |             |       |             |
| Unit Cost                                   | \$1.25  | \$0.00     | \$1.25  |       |             | \$0.00      |       |             |
| Units per Package                           | 25.00   | 25.00      | 25.00   |       |             | 25.00       |       |             |
| Total Cost Impact (million \$)              | \$2     | \$0        | \$0     | \$2   |             | \$0         | \$0   | \$2         |
| Transport and Related Services Impacts      |         |            |         |       |             |             |       |             |
| Per Shipment Fee                            | \$35    | \$35       | \$35    |       |             | \$35        |       |             |
| Per Kilogram Surcharge                      | \$1.50  | \$1.50     | \$1.50  |       |             | \$1.50      |       |             |
| Share with Kilogram Surcharge               | 75%     |            | 75%     |       |             | 10%         |       |             |
| Weighted Cost Impact Per Shipment           | \$658   | \$35       | \$35    |       |             | \$52        |       |             |
| Total Cost Impact (million \$)              | 59      | \$0        | \$0     | \$9   |             | \$2         | \$2   | \$11        |
| Ratio of Other Services                     |         |            |         |       |             |             |       | 24%<br>\$14 |
| Inventory Cost Impacts                      |         |            |         |       |             |             |       | \$14        |
| Average Delay per Shipment (days)           | 1.00    | 1.00       | 1.00    |       |             | 0.50        |       |             |
| Value of Time Saving per Day                | 0.9%    | 0.9%       | 0.9%    |       |             | 0.9%        |       |             |
| Total Cost Impact (million 5)               | \$3     | \$0        | \$0     | \$3   |             | \$1         | \$1   | \$4         |
| Training Impacts                            |         |            |         |       |             |             |       |             |
| Ratio of Employees per 1,000 Shipments      |         |            |         |       |             |             |       | 10.0        |
| Total Employees                             |         |            |         |       |             |             |       | 547         |
| Cost per Employee                           |         |            |         |       |             |             |       | \$400       |
| Total Cost Impact (million \$)              |         |            |         |       |             |             |       | \$0.2       |
| Combined Cost Impacts                       |         |            |         |       |             |             |       |             |
| Total Cost Impact (million \$)              | \$14    | \$0        | SO.     | \$14  |             | \$3         | \$3   | \$20        |
| per Unit *                                  | \$0.30  |            | \$0.00  | Alle  |             | \$0.44      |       | 50.43       |
| % of Unit Value                             | 2.8%    |            | 0.0%    |       |             | 4.0%        |       | 4.0%        |
| Lost Sales Impacts (at 1.0 elasticity)*     |         |            |         |       |             |             |       |             |
| Number of Units (millions)                  | 0.7     | 130        | -       | 0.7   |             | 0.9         | 0.9   | 1.6         |
| Sales (million \$)                          | \$7     |            | 30      | \$7   |             | \$10        | 510   | 517         |

<sup>\*</sup> Adjusted for imports that are transshipped to domestic or foreign markets.

# SUMMARY OF INDUSTRY-BASED COST IMPACTS

|  | Cellphones &     | Notebook and       | Audio & Video |                  | Other Electronic |  |           |
|--|------------------|--------------------|---------------|------------------|------------------|--|-----------|
|  | Related Products | Handheld Computers | Equipment     | Hand Power Tools | Goods            | Lithium Ion Batteries  | Total     |
|  |                  |                    |               |                  |                  |  |           |
| Summary Direct Cost Impacts (million \$)     | \$70.0           | 0 \$25.2           | \$64.7        | \$1.0            | \$21.5           | 5 \$1.8  | \$182,4   |
| Packaging Air Transport and Other Services   | \$126.6          |                    | \$48.2        |                  | \$29.3           |  | \$338.6   |
|  | \$230.           |                    | \$50.8        |                  | \$22.2           |  | \$377.8   |
| Inventory Training                           | \$2.0            |                    | \$0.6         |                  | \$0.6            |  | \$4.7     |
| Halling                                      | \$429.4          |                    | \$164.2       |                  | \$73.6           | The state of the s | \$903.5   |
| Foreign-to-Foreign Impacts                   |                  |                    |               |                  |                  |  |           |
| Ratio of Foreign-to-Foreign to U.S. Trade    | 3.24             | 1.17               | 1.72          | 2.70             | 1.72             | 1.00   |           |
| U.S. Company Share of Total Trade            | 50%              |                    | 50%           |                  | 50%              | 10.45  |           |
| Express Share of Air Shipments               | 86%              |                    | 79%           |                  | 79%              |  |           |
| U.S. Airline Share of Trade                  | 25%              |                    | 25%           |                  | 25%              |  |           |
| Foreign-to-Foreign Cost Impacts (million \$) | \$149.           |                    | \$27.7        | \$0.8            | \$12.4           |  | \$223.5   |
|  |                  |                    |               |                  |                  |  | \$1,127.1 |
| U.SBased Trade Impacts                       |                  |                    |               | 3.2              |                  |  | 40.00     |
| Total Product Value (million \$)             | \$43,02          |                    | \$9,605       |                  | \$4,007          |  | \$81,185  |
| Number of Units (million)                    | 229.7            |                    | 103,5         | 0.7              | 34.4             | 717.65   | 408.6     |
| Affected by Rule                             | 114.9            |                    | 51.7          | 0.4              | 17.2             | 2000   | 204.3     |
| Share Affected                               | 50%              |                    | 50%           |                  | 50%              |  | 50%       |
| Average Unit Value                           | \$18             |                    | \$93          |                  | \$116            |  | \$199     |
| Average Cost Impact per Unit                 | \$1.8            |                    | \$1.59        |                  | \$2.14           |  | \$2.21    |
| % of Unit Value                              | 1.0%             |                    | 1.7%          |                  | 1.8%             |  | 1.1%      |
| Number of Shipments (000)                    | 941.2            |                    | 273.7         | 15.4             | 295.2            | 72.20%   | 2,125.8   |
| Affected by Rule                             | 505.4            |                    | 148.7         | 8.7              | 158.1            |  | 1,185.2   |
| Share Affected                               | 549              |                    | 54%           |                  | 54%              | 100000   | 56%       |
| Average Cost Impact per Shipment             | \$45             | 6 \$389            | \$600         | \$195            | \$249            | 9 \$316  | \$425     |
| Lost Sales Impacts                           |                  |                    |               |                  |                  |  |           |
| Number of Units (million)                    | 2.2              |                    | 1.7           | 0.0              | 0.6              |  | 4.9       |
| Sales (million \$)                           | \$43             | 4 \$224            | \$160         | \$3              | \$76             | \$17   | \$897     |