



**Commodity Flow Survey  
PATRAM 2010  
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London, U.K.**

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## COMMODITY FLOW SURVEY - BACKGROUND -

- The U.S Department of Energy (DOE) makes 10,000 - 20,000 shipments per year of radioactive and hazardous materials by commercial carrier



- DOE's Office of Packaging and Transportation is accountable for the safety and security of its shipments
- This office performs DOE's Stakeholder Outreach and Emergency Preparedness mission for Transportation
- In cooperation with our

stakeholders, we have performed seven 24-Hour Commodity Flow Surveys along Interstate Highways and surveyed over 55,000 commercial vehicles



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# COMMODITY FLOW SURVEY - PLANNING -

## DEVELOPMENT OF SURVEY PLAN



- Location, Date, and Duration
- Personnel Staffing Requirements
- Safety Considerations
  - Safe Area for Survey
  - Establish Safety Rules
  - Night Lighting and Signage
- Survey Team Needs
  - Shelter from Weather
  - Reflective Clothing
  - Sun Protection
  - Water and Snacks
  - Restroom Facilities
- Data Collection
  - Guidance for Collecting Data
  - Data Sheets and Logbook
  - Training Materials



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# COMMODITY FLOW SURVEY - TRAINING -

## PROVIDE SURVEY TEAM TRAINING



- Schedule Survey Team Meeting  
Full Team (12-24 Persons)
- Provide Training Materials and Instruction
  - Survey Objectives – Data Quality
  - Safety Rules
  - Vehicle Identification
  - Shipping Paper Familiarization
  - Survey Forms
  - Rules for Data Entry



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# COMMODITY FLOW SURVEY - THE SURVEY -

## CONDUCT of SURVEY



- Survey Team Ready  
Data Sheets in Hand
- Begin at the Appointed Time
- Query Driver and Record Data
- Thank Driver and Release Vehicle
  
- Repeat the Cycle
  
- Enter data sheets in Logbook at  
end of shift
- Keep traffic flowing smoothly; Use  
discretion; Be prepared to deploy  
second team if traffic warrants



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# COMMODITY FLOW SURVEY - SAMPLE DATA SHEET -

- Eastbound  
 Westbound

J. L. Smith  
Observer

| # | Time  | Trailer Type | Placard Number | Material ID# | Origin/<br>Destination       | Hazmat Load<br>e.g. Specific Material, Weight/Volume |
|---|-------|--------------|----------------|--------------|------------------------------|--|
| 1 | 09:00 | Van          | 8              | 1791         | Rock Hill, SC<br>Sylva, NC   | Hypochlorite Solution, 18%<br>2,000 lbs              |
| 2 | 09:02 | Double Van   | 3              | 1133         | Richmond, VA<br>Tempe, AZ    | Adhesives<br>1418 lbs                                |
|   |       | "            | 3              | 1193         | "                            | Methyl ethyl ketone<br>1505 lbs                      |
|   |       | "            | 8              | 2794         | "                            | Wet Batteries<br>1900 lbs                            |
| 3 | 09:05 | Van          | 3              | 1263         | Raleigh, NC<br>Searcy, AR    | Paint<br>248 lbs                                     |
|   |       | "            | 8              | 3066         | "                            | Paint<br>742 lbs                                     |
| 4 | 09:09 | MC 306       | 3              | 1203         | Charlotte, NC<br>Enka, NC    | Diesel<br>6700 gal                                   |
| 5 | 09:16 | MC 338       | 2              | 1073         | Hickory, NC<br>Knoxville, TN | Oxygen<br>42,980 lbs                                 |
| 6 | 14:22 | MC 307       | 9              | 3082         | Greer, SC<br>Santa Ana, CA   | Methylene diphenyl diisocyanate<br>44,020 lbs        |
| 7 | 15:56 | MC 312       | 3              | 1219         | Hopewell, VA<br>Tulsa, OK    | Isopropanol<br>19,980 lbs                            |
| 8 | 15:58 | MC 307       | 9              | 3257         | Asheville, NC<br>Canton, NC  | Asphalt<br>Empty                                     |



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# COMMODITY FLOW SURVEY - THE SURVEY REPORT-

## THE CFS REPORT



- Documents the Survey Data Taken  
Survey Data Table
- Performs Data Analysis
- Displays Findings  
Tables and Charts
- Presents Conclusions Drawn from  
Findings
- Examines Special Conditions  
Intersecting Highway Flow  
Predominant Commodities



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# COMMODITY FLOW SURVEY - SAMPLE DATA TABLE PAGE -

| Time  | Dir. | Trailer Type | Orig/<br>Dest | Trailer<br>Placard | Material Hazard<br>Class | Mat'l<br>ID | Material PSN                          | Material Name             | ERG Guide<br>Number | Quantity<br>(lbs) | Other                         |
|-------|------|--------------|---------------|--------------------|--------------------------|-------------|---------------------------------------|---------------------------|---------------------|-------------------|-------------------------------|
| 12:18 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Heating Oil               | 128                 | 0                 | Empty                         |
| 12:19 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Diesel                    | 128                 | 0                 | Empty                         |
| 12:20 | West | MC407        | WV-NJ         | 3                  | Flammable Liquid         | 1247        | Methyl methacrylate monomer           | Methyl Methacrylate       | 129P                | 0                 | Residue-Empty                 |
| 12:24 | West | MC306        | MD-MD         | 9                  | Miscellaneous            | 3257        | Elevated temperature liquid, NOS      | Asphalt                   | 128                 | 21,262            |                               |
| 12:25 | West | Van          | MD-OH         | 8                  | Corrosive                | 2794        | Batteries, wet, filled with acid      | Batteries                 | 154                 |                   |                               |
| 12:33 | East | MC312        | MD-MD         | 9                  | Miscellaneous            | 3257        | Elevated temperature liquid, NOS      | Asphalt                   | 128                 | 0                 | Coating                       |
| 12:36 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Diesel                    | 128                 | 0                 | Empty                         |
| 12:39 | East | MC312        | TX-NJ         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Toluene & Aliphatic Waste | 128                 |                   | 4751 gal                      |
| 12:40 | West | MC312        | MD-IN         | 3                  | Flammable Liquid         | 1206        | Heptanes                              | Heptanes                  | 128                 | 74,600            | 7554 gal                      |
| 12:44 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Heating Oil               | 128                 | 0                 | Empty                         |
| 12:49 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1993        | Combustible liquid, NOS               | Diesel                    | 128                 | 0                 | Empty                         |
| 12:56 | West | Van          | MD-OH         | 8                  | Corrosive                | 2794        | Batteries, wet, filled with acid      | Batteries                 | 154                 | 1,600             |                               |
| 13:05 | East | Tube Trailer | MD-DE         | 2.2                | Nonflammable<br>Gas      | 1046        | Helium, compressed                    | Helium                    | 121                 |                   | 12 Tubes - partial load -half |
| 13:13 | West | MC306        | PA-OH         | 3                  | Flammable Liquid         | 1203        | Gasoline                              | Gasoline                  | 128                 | 71,980            |                               |
| 13:16 | East | MC312        | PA-MD         | 8                  | Corrosive                | 3267        | Corrosive liquid, basic, organic, NOS | Organic Waste             | 153                 |                   | 4500 gal                      |
| 13:22 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1203        | Gasoline                              | Gasoline                  | 128                 | 0                 | Empty                         |
| 13:25 | West | MC307        | MD-MD         | 3                  | Flammable Liquid         | 1202        | Diesel fuel                           | Diesel                    | 128                 | 52,521            | 7503 gal                      |
| 13:27 | East | MC306        | MD-MD         | 3                  | Flammable Liquid         | 1203        | Gasoline                              | Gasoline                  | 128                 | 0                 | Empty                         |
| 13:33 | East | Van          | WV-MD         | 8                  | Corrosive                | 1751        | Corrosive solid, NOS                  | Corrosive Solids          | 154                 |                   | 672 Cases                     |
| 13:35 | East | MC312        | MD-MD         | 9                  | Miscellaneous            | 3257        | Elevated temperature liquid, NOS      | Asphalt                   | 128                 | 0                 | Coating                       |
| 13:35 | West | Van          | MD-MI         | 9                  | Miscellaneous            | 3077        | Hazardous waste, solid, NOS           | Arsenic Trioxide waste    | 171                 | 44,489            |                               |
| 13:35 | West | Van          | CT-TN         | 7                  | Radioactive              | 2982        | Radioactive material, NOS             | Radioactive Material      | 163                 | 10,000            |                               |



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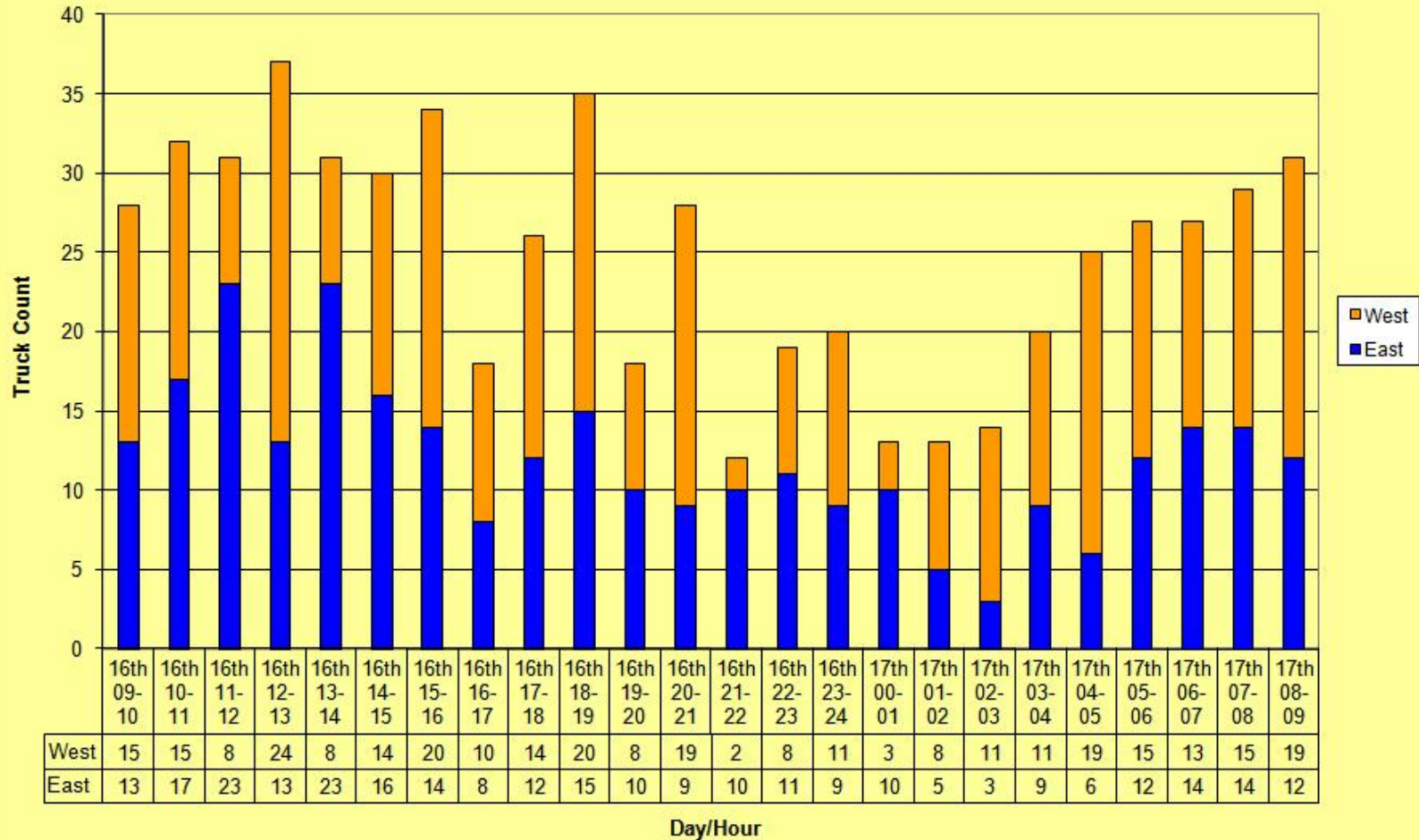
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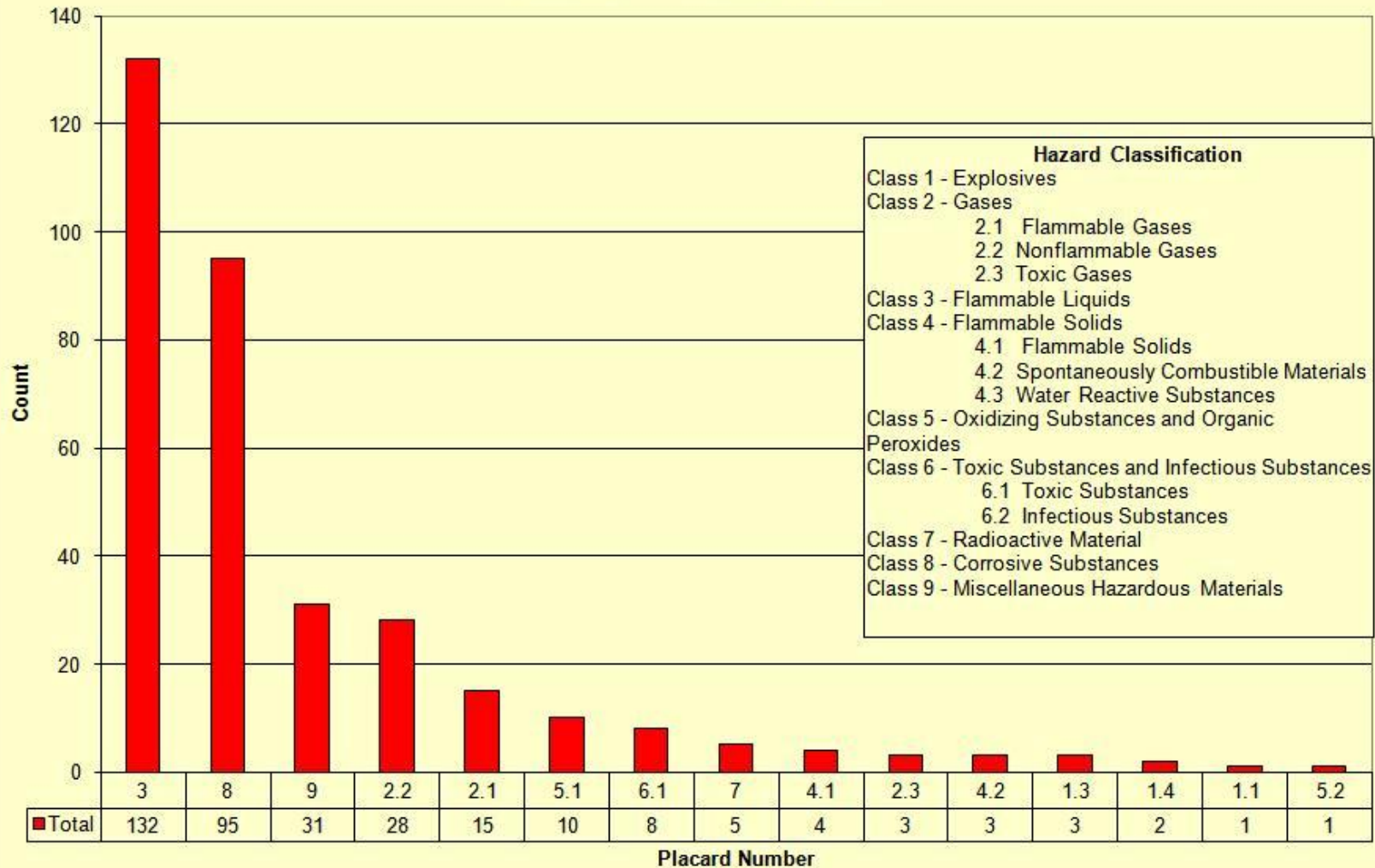
# COMMODITY FLOW SURVEY

Chart 1 - Truck Count by Hour (Total)



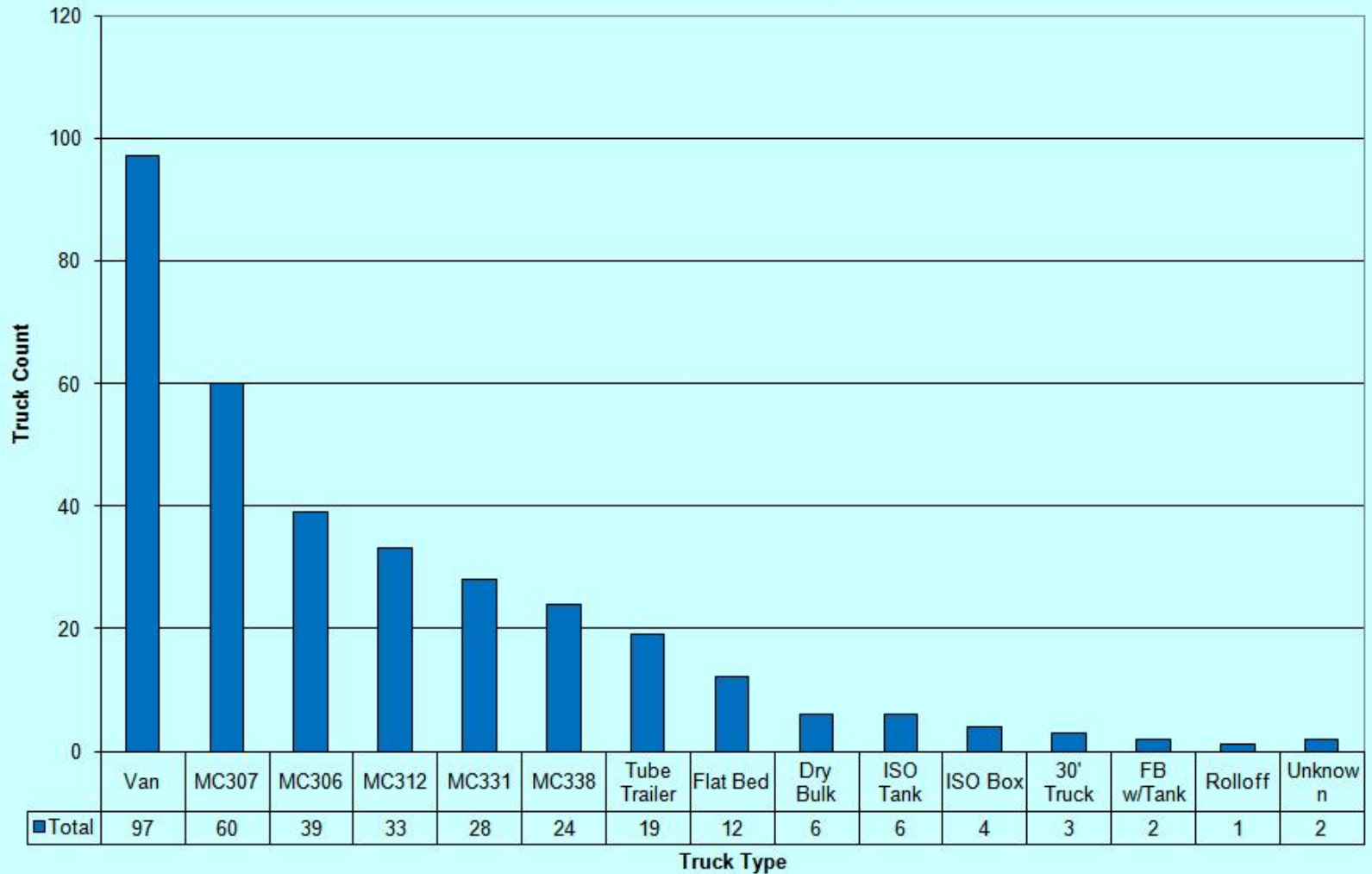
# COMMODITY FLOW SURVEY

## Chart 2 - Placard Count



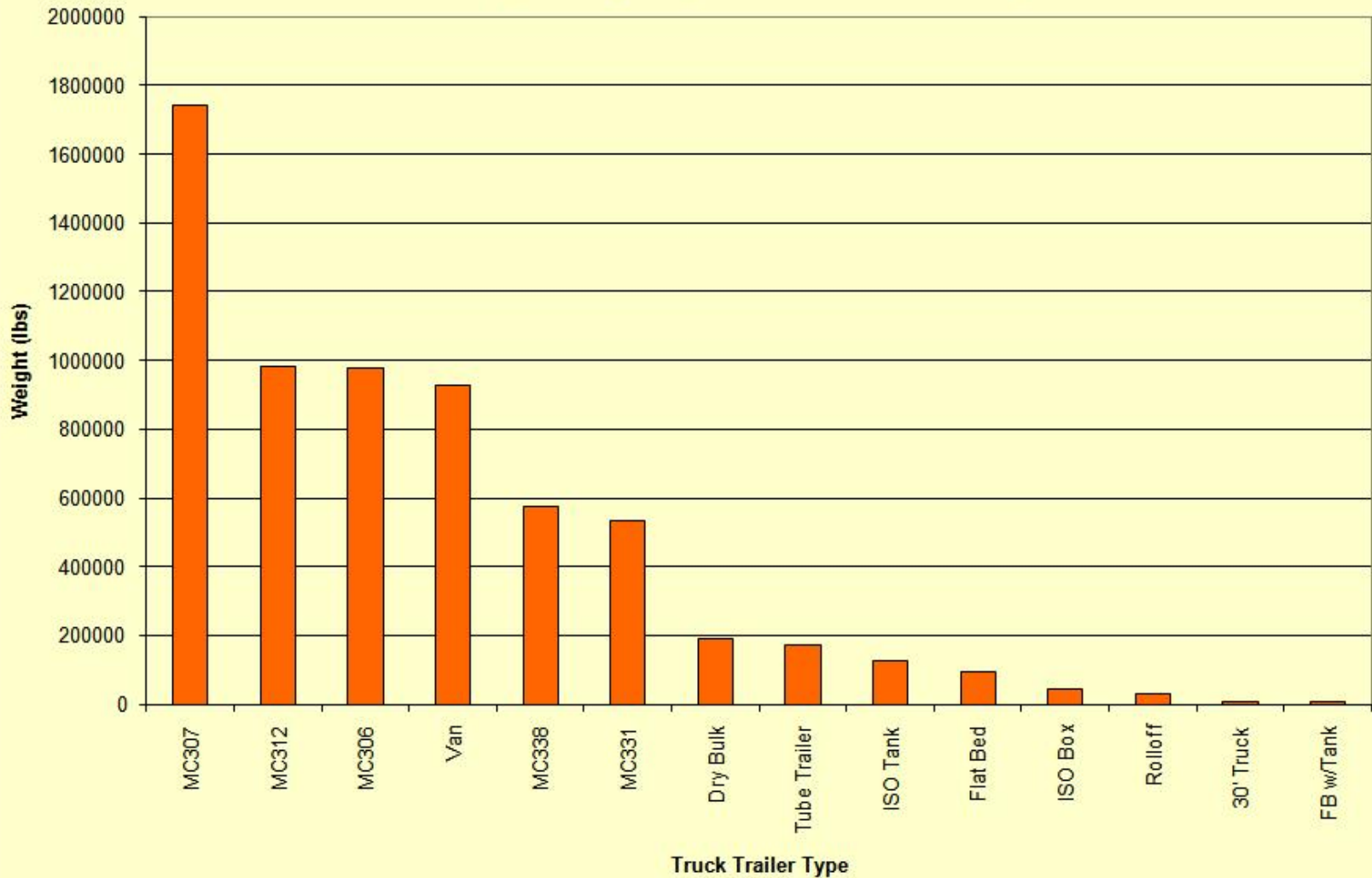
# COMMODITY FLOW SURVEY

Chart 3 - Count of Truck Types



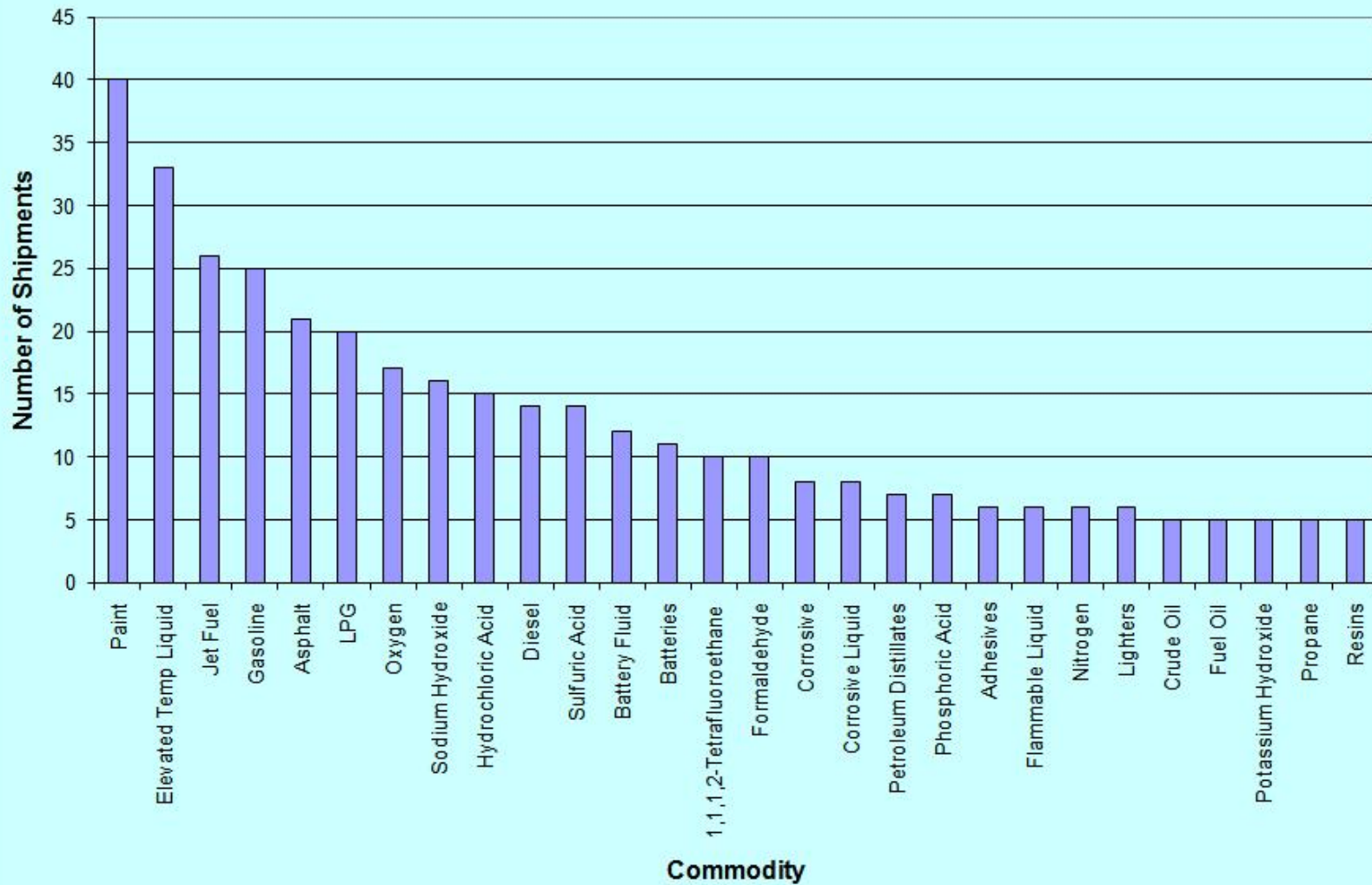
# COMMODITY FLOW SURVEY

## Chart 4 - Freight Weight by Commercial Vehicle Type



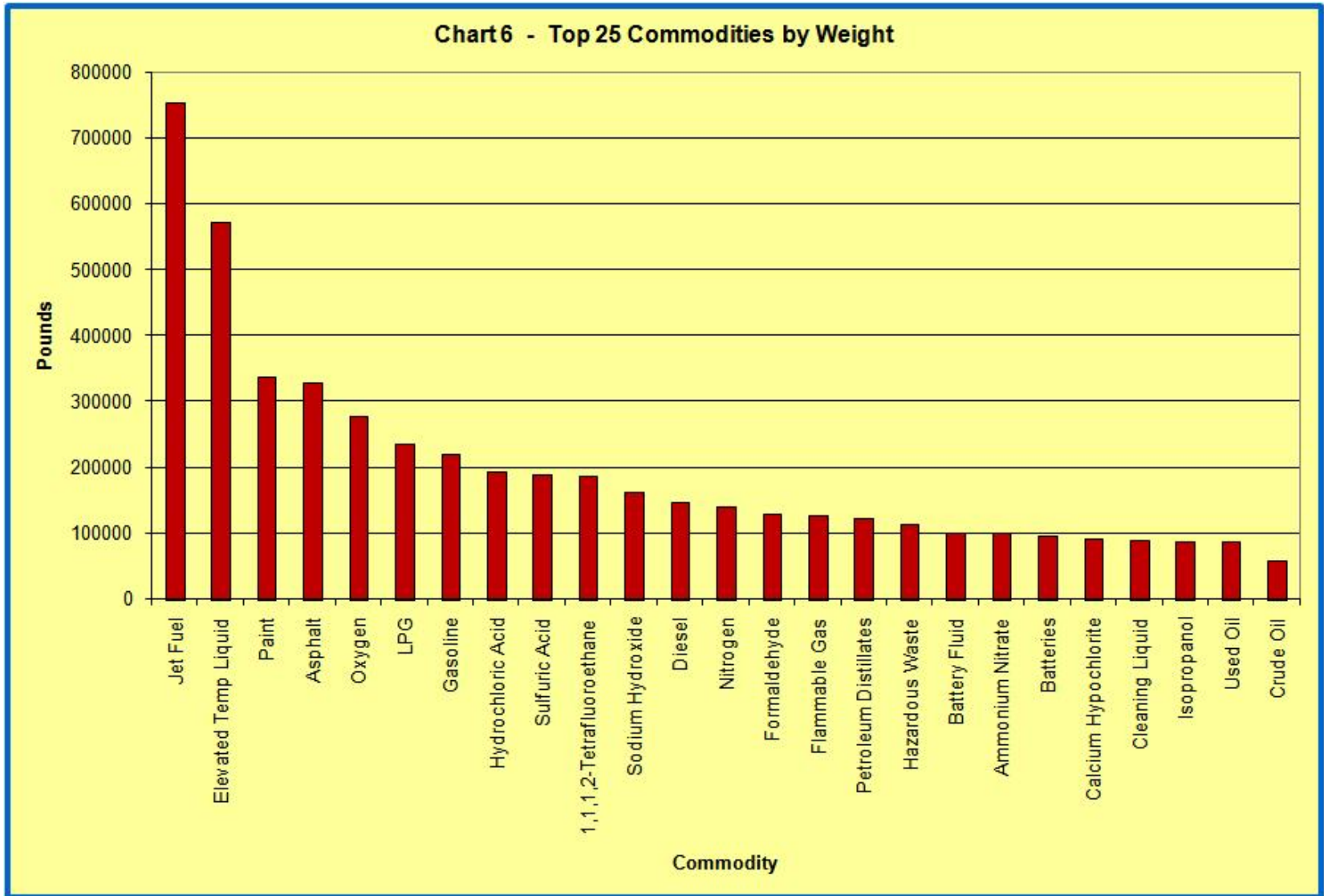
# COMMODITY FLOW SURVEY

Chart 5 - Top 25 Commodities by Count

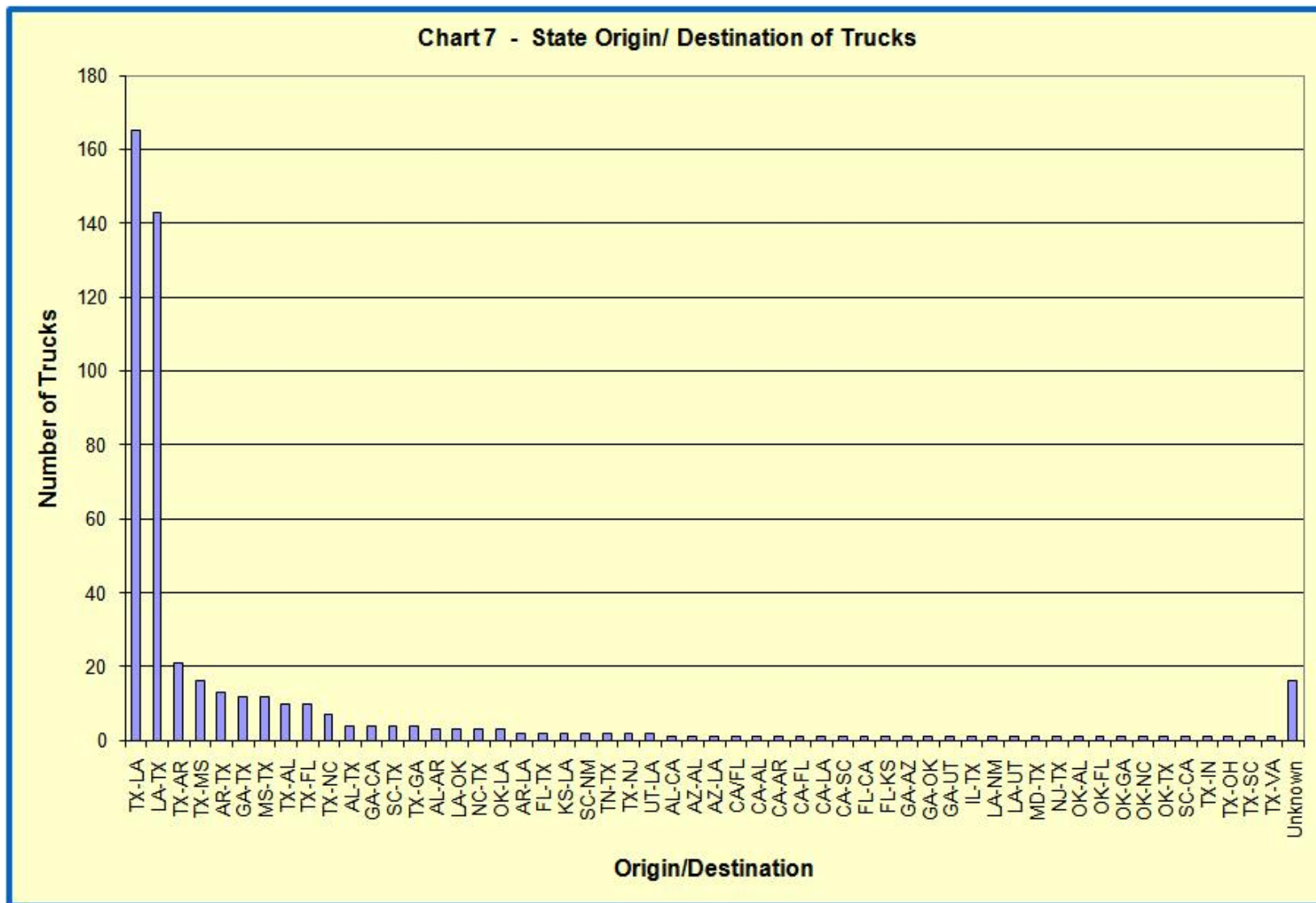


# COMMODITY FLOW SURVEY

Chart 6 - Top 25 Commodities by Weight

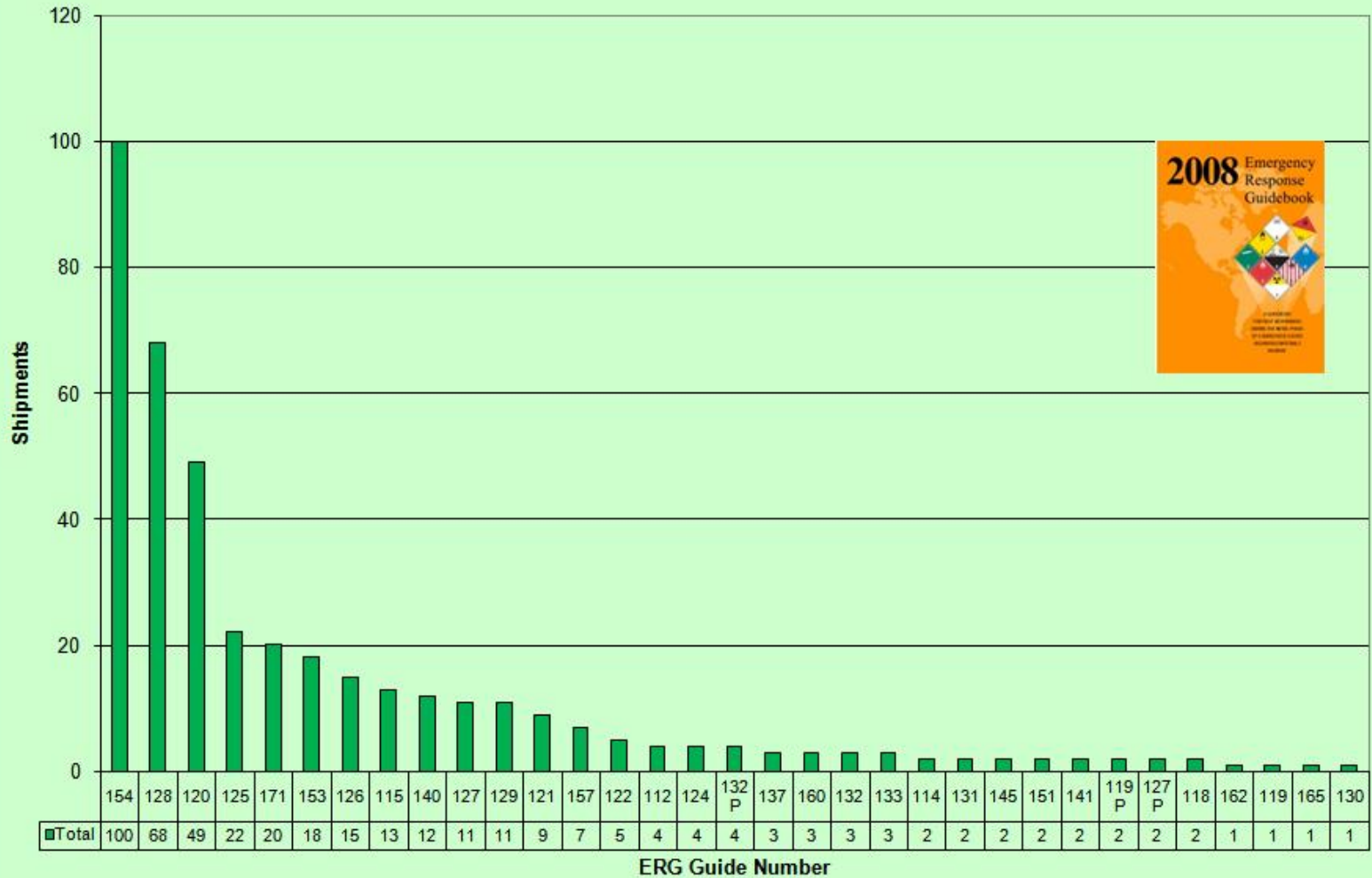


# COMMODITY FLOW SURVEY



# COMMODITY FLOW SURVEY

Chart 8 - Emergency Response Guidebook (ERG) Guide Numbers by Shipments



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