HAZARDOUS MATERIALS
COMMODITY FLOW STUDIES

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Purpose

To Identify types and amounts of hazardous materials moving through a geographic area.
Why do a flow study?
Identify commodities, i.e., threats
Match response capability to threat
Route traffic
Identify training needs
Identify equipment needs
Allocate resources
Reduce likelihood of release
Improve compliance
Increase enforcement

TO IMPROVE PUBLIC SAFETY
A FLOW STUDY IS **BASIC**, **FUNDAMENTAL**
**HAZARDOUS MATERIALS EMERGENCY PLANNING**

(Exactly what LEPCs are supposed to do.)
How to start:

- Identify reasons (what will you do with results)
- Identify modes (highway, rail, water, air)
- Identify routes, observation times
- Identify methodology
METHODOLOGY

• Placard survey
• Shipping Papers
• Site visits
• Questionnaires
• Interviews
METHODOLOGY FOR HIGHWAYS

- What type of truck?
- What counts and what doesn’t?
- Placards and UN numbers
- How to record data?
- Safety
DOT HAZARDOUS MATERIALS
CLASSES
DOT HAZARDOUS MATERIALS CLASSES

• CLASS I: EXPLOSIVES
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
DOT HAZARDOUS MATERIALS
CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
- CLASS 5: OXIDIZERS
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
- CLASS 5: OXIDIZERS
- CLASS 6: POISONS
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
- CLASS 5: OXIDIZERS
- CLASS 6: POISONS
- CLASS 7: RADIOACTIVE
DOT HAZARDOUS MATERIALS CLASSES

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
- CLASS 5: OXIDIZERS
- CLASS 6: POISONS
- CLASS 7: RADIOACTIVE
- CLASS 8: CORROSIVES
DOT HAZARDOUS MATERIALS

- CLASS 1: EXPLOSIVES
- CLASS 2: GASES
- CLASS 3: FLAMMABLE LIQUIDS
- CLASS 4: FLAMMABLE SOLIDS
- CLASS 5: OXIDIZERS
- CLASS 6: POISONS
- CLASS 7: RADIOACTIVE
- CLASS 8: CORROSIVES
- CLASS 9: MISCELLANEOUS
RECENT INDIANA STUDIES

- Jefferson
- Ripley
- Wabash
- Hamilton
- Elkhart
TYPICAL RESULTS

• 5% of commercial traffic is hazmat
• Normal distribution curves
• Class 3 wins, followed by 2 and 8
• Surprises every time
• Hazmat is everywhere in your county
• The other classes are present, too!
TRAFFIC VOLUME (trucks per hour)

• Rural County Road - 5 to 10
• Rural State Highway - 15 to 45
• Urban State Highway - 50 to 70
• Rural Interstate - 160 to 180 (two lanes, one way)
• Urban Interstate - 250 + (two lanes, one way)
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Common Commodities
(not unexpected)

- Gasoline
- Liquified Petroleum Gas (Propane)
- Denatured Alcohol
- Ethanol
- Oxygen
- Nitrogen
- Sodium Hydroxide
Specific Placards
(surprise)

- Jefferson - 32
- Wabash - 52
- Ripley - 105
- Hamilton - 119
- Elkhart - 136
Hot Stuff

• Use data to identify unusual materials
• 2192 - Germane  (Class 6)
• 2810 - Sarin  (Class 6)
• 1384 - Sodium Hydrosulfite  (Class 4)
• 2078 - Toluene Diisocyanate  (Class 6)
Hot Spots

- Trucks per hour and HazMat % tell the story
- Compare data with other spots in County
- Ripley, Hamilton, Elkhart examples
HazMat Density

• Use CAMEO/ALOHA and Census data.
• What population is affected by a serious hazmat incident?
• Plot plume lengths along high risk roadways.
• Read ‘em and weep...
A few words about Trains

• Ask them, they will tell you
• CSX: Tom Murta, 904-359-3774
• NS: D.L. Schoendorfer, 582-981-3595
• Government officials get best results
• Exotic stuff in large quantities
QUESTIONS or PROJECTS?
CALL ME!

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