Your Assignment

Determine the best method of shipment of 60,000 tons of coal from Duluth MN, to Cleveland, OH.

– Analyze
  • Ship
  • Train
  • Truck

– Direct Effects
  • Fuel consumption
  • Air pollution
  • Wildlife effects
– Secondary effects
  • See what you come up with

– Assume
  • Any return train or truck trips are empty
  • Use state truck speed limits

– Present results in English Units!!!
  • Most environmentally-friendly
  • Most economical

– Due October 30
Stewart J. Cort (Interlake Steamship)
Indiana Harbor (American Steamship)
Presque Isle (Great Lakes Fleet)
Duluth MN to Cleveland OH

- 60,000 tons
- 833 miles
- Speed = approx. 17 mph
- Fuel = 42 gallons/mile (diesel)
- CO = 2.39 lbs/mile
- HC = 0.81 lbs/mile
- NOx = 17.63 lbs/mile
- Potential accidents
  - Fatalities = 0.00012/one-way
  - Injuries = 0.00028/one-way
  - Collisions/groundings = 0.0049/one-way
- Crew = 30
  - Captain = $120,000 - $160,000 / year
  - Deckhand = $40,000 / year
• One loaded “footer” =

  – 6 trains, 100 100-ton cars

  – 2308 trucks, 26 tons per truck