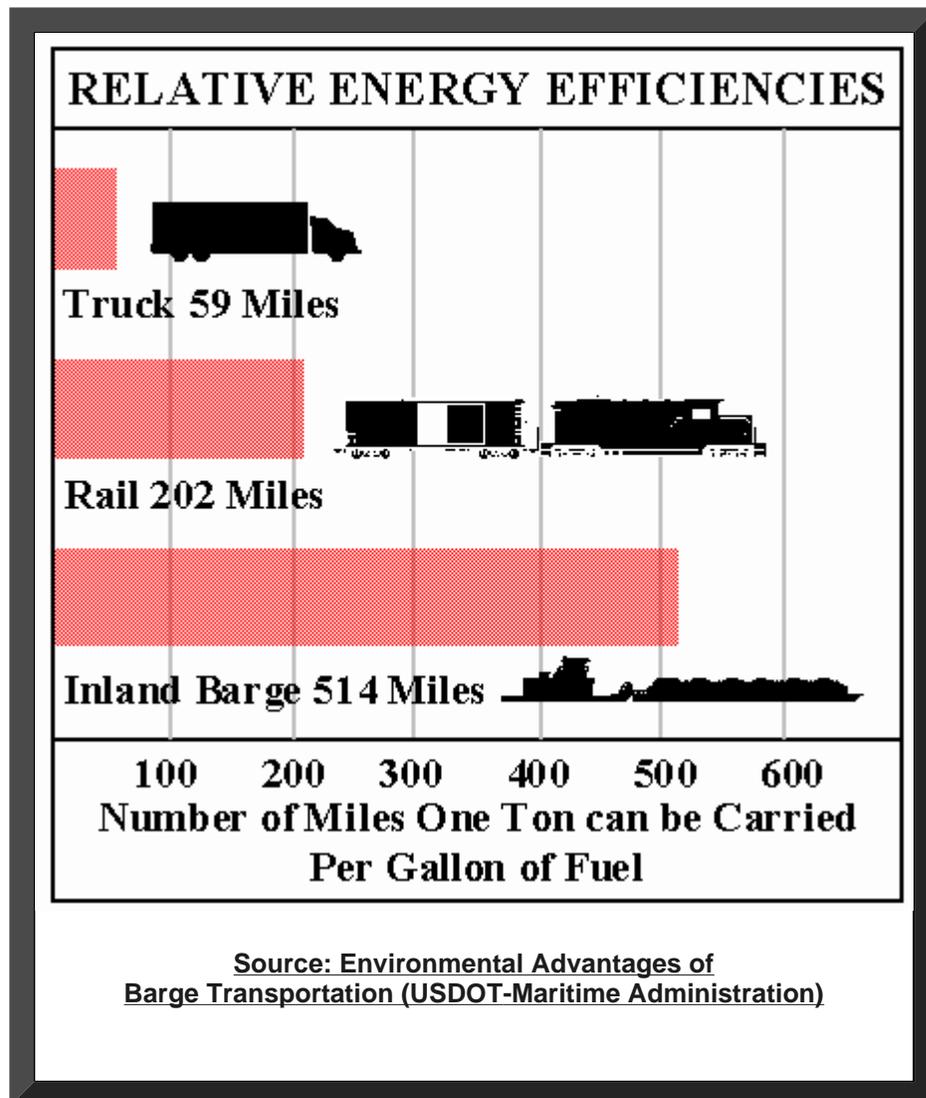


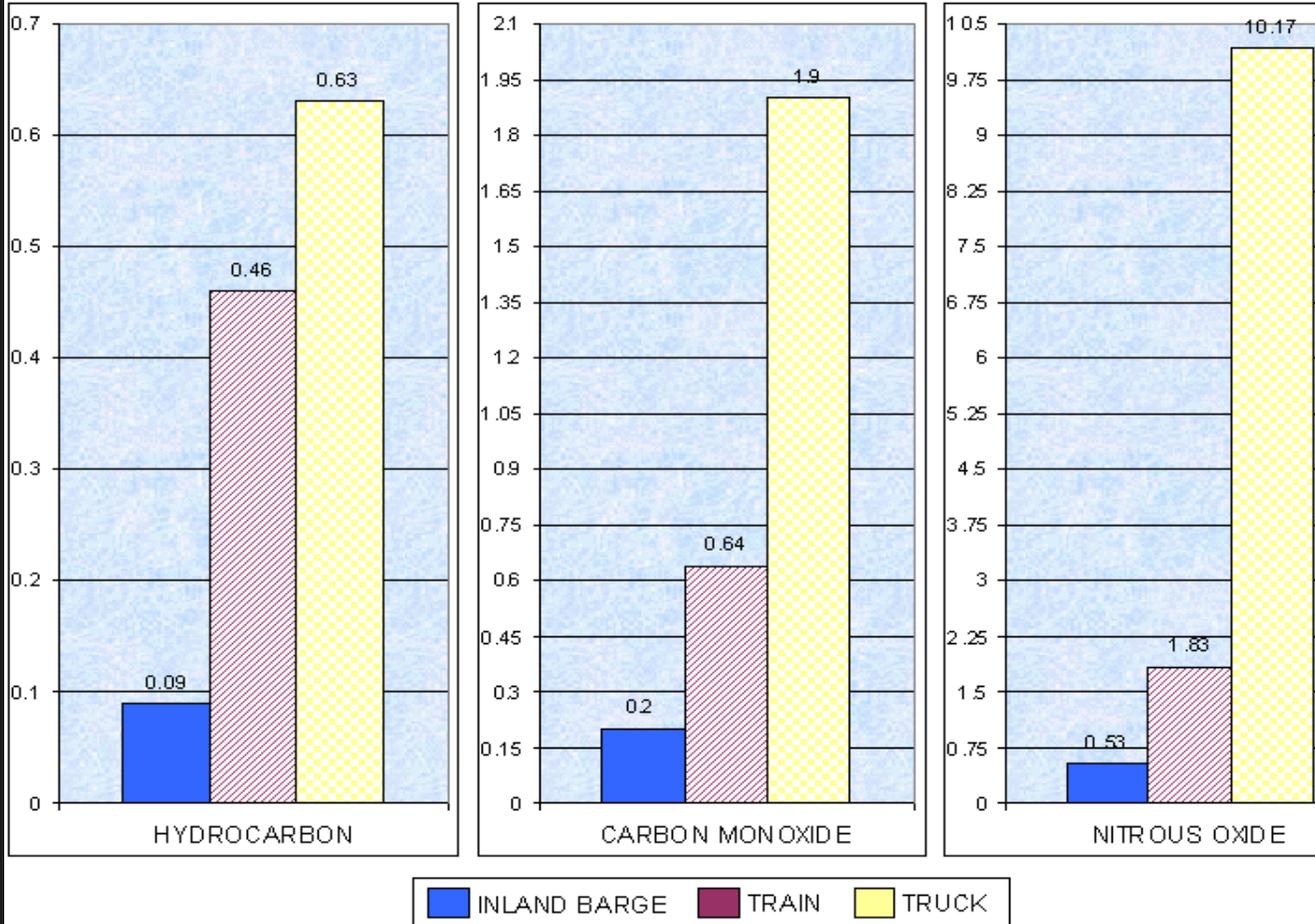


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TRANSPORTATION MODE COMPARISON - ENERGY-ENVIRONMENT-EFFICIENCY



EMMISSIONS PRODUCED
Pollutants (in pounds) produced in moving one of cargo 1,000 miles



EMMISSIONS PRODUCED
Pollutants (in pounds) produced in moving one ton of cargo 1,000 miles
 (Chart Above)

MODE	Hydrocarbon	Carbon Monoxide	Nitrous Oxide
Tow boat	.09	.20	.53
Train	.46	.64	1.83
Truck	.63	1.90	10.17

**SOURCE: ENVIRONMENTAL PROTECTION AGENCY,
 EMISSION CONTROL LAB**

Water transport consumes much less energy per ton-mile of freight carried than either rail or truck. This factor, combined with the remoteness or the vessel's

operating environment from population centers, substantially reduces the impact of its exhaust emissions.

Hydrocarbon vapor emissions from tank ships and barges while loading or unloading petroleum products amount to only about .02 percent of all volatile organic emissions nationally. Nevertheless, the U.S. Coast Guard has developed regulations for the use of vapor control systems to reduce these emissions, and the waterway industry is installing equipment to meet these requirements.

Protection of the marine environment from pollution is a major concern shared by the barge and towing industry with both Federal and State environmental agencies. The Coast Guard has law enforcement responsibilities relating to the protection of the marine environment, and many of its safety regulations for vessels have been enacted to serve this purpose.

Additionally, the Clean Air Act of 1990 requires installation of vapor recovery systems that will reduce emissions of petroleum and petrochemical vapors on barges designed to carry liquid cargoes - a feature that is expected to cost the industry between \$150 and \$200 million.

ENVIRONMENTAL IMPACTS OF A MODAL SHIFT MN. D.O.T. PORTS AND WATERWAYS SECTION

What was determined in the analysis was that a shift to trucks from vessels would cause:

- A 826% increase in fuel use annually
- A 709% increase in exhaust emissions annually
- A 5,967% increase in probable accidents each year
- The need to annually dispose of 2,746 used truck tires, and
- An additional truck traffic load of 1,333 heavy vehicles each day in the study corridors

In the two corridors where rail is a possible transportation alternative the annual changes with a vessel to rail shift are:

- Fuel use grows by 331%

- **Emissions jump by 470%**
- **Probable accidents grow by 290%**

Clearly, those major levels of change show great support for including in the environmental study process the analysis of the damage that can be done to the environment by using a land transportation system to replace a viable water system.

QUESTIONS - COMMENTS

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Last modified: January 07, 2002

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