

Transporting

Hazardous Materials

On The Ohio River



The tug pushes heavily loaded barges away from the busy river bank, beginning its nearly 1,000 mile journey down the Ohio River. The flat, dark shapes float past industries and utilities of the Ohio River Valley, toward the rich farmlands and thriving cities. The cargo may be coal or oil, perhaps other minerals or even less familiar products: sodium hydroxide, sulfuric acid, benzene.

The Ohio River and its major tributaries serve as primary "highways" of commerce for the industrial heartland of America. The Ohio River carries over 150 million tons of freight each year, about 60 percent of which is bituminous coal. Along with shipments of such non-toxic cargo are increasingly frequent transports of chemicals, fertilizers, and industrial products which, in sufficient concentrations, are toxic to humans and aquatic life. Shipments of known hazardous materials exceed 30 million tons each year — or an average of 80 thousand tons each day. Table 1, lists the shipments of various kinds of freight on the Ohio and provides tonnage for certain hazardous cargos.

The Ohio River, which supplies drinking water to more than three million people, is a major recreational site for millions more, and is home to more than 80 species of fish.

Prevention of spills or other discharges to Ohio Valley rivers during the loading, transport and unloading of cargo is a major program of the manufacturing and river transport industries and governmental agencies concerned. Federal statutes which control the transport of hazardous and other materials are administered by the U.S. Coast Guard, the U.S. Corps of Engineers, and the U.S. Environmental Protection Agency. State environmental and natural resources agencies act individually and collectively through the Ohio-River Valley Water Sanitation Commission to regulate discharges and the quality of water in the Ohio River and its major tributaries. The Commission operates, in cooperation with public and private water users, an Organics Detection System (ODS), a network of detection and notification stations located to protect major Ohio River Valley water supplies. The Corps of Engineers and the U.S. Coast Guard have regulations covering the loading, unloading and transport of "tows" along with spill contingency plans. "Tows" is the term which describes towboats pushing barges linked together as mules and horses "towed" barges along canals in the 19th century. It is a term that has "stayed."

This effort at preventing major spills has four main components:

- **BARGE CONSTRUCTION SPECIFICATIONS**
- **PUMP SAFETY DEVICES**
- **LICENSING**
- **INSPECTION**

Today, the fact that there are so few accidental discharges and spills is a tribute to the success of these efforts.



*Above, Tow and barges pass through locks on the Ohio River
Army Corps of Engineers Photo*



BARGE CONSTRUCTION

Figure 1 illustrates several types of barges which are available for the transport of liquids. A *single skin barge* is a barge having one layer of steel or other material between the liquid being transported and the river water. *Double skin barges* provide annular space between two layers of steel. One layer contains the fluid being transported while the other layer is in contact with the river water. The hollow space between the layers may be monitored to check for leaks. The double skin barge extends this protection to the vessel's underside. A third type has a completely independent tank containing the fluid being transported resting upon the barge, which may have different configurations. Barges are also compartmentalized such that if one compartment is broken open, the material from other compartments will still be secure. Each successive type offers a greater degree of protection against the possibility of spilling the liquid in the event of an accident. The greater the protection provided to the transported material, the more expensive the barge and, hence, the more expensive the transportation.

Figure 1



