



MISSISSIPPI RIVER ENVIRONMENTAL REPORT CARD

by Jerald Horst

The Mississippi River is one of Louisiana's most important resources. Its sediments built our marshes and swamps and the nutrients it carries fertilize the waters of the Gulf of Mexico. The river provides a significant fishery and serves as a source of drinking water. To rebuild deteriorated marshes, several freshwater diversions from the river into the marshes are currently in operation and even more are planned. The environmental health of the river is obviously important. Some individuals and groups view the river as a giant sewage ditch loaded with pollutants and toxins. Others see it as a valuable resource whose waters and sediments are vital to Louisiana's coastal restoration effort. The Mississippi River has been extensively studied by the U.S. Geological Survey (USGS) and the Louisiana Department of Environmental Quality (LDEQ). The results of this monitoring and research are as follows:

Heavy metals. These are elements such as iron, copper, zinc, uranium, cadmium, lead, and mercury. Some are needed in the diets of humans. Others, such as lead, mercury and cadmium, can be poisonous when they occur in high concentrations. Some heavy metals are contributed to the Mississippi River by natural processes such as erosion, but it is estimated that mining adds ten times as much to the water as is natural. Most heavy metals are not dissolved in the water but are attached to sediment particles carried by the river.

Generally speaking, concentrations of heavy metals decrease the farther down the river that samples are taken. Overall, concentrations of heavy metals dissolved in the 1700 miles of the river are well below legal guidelines. However, many individual sample locations showed levels of heavy metals in river sediments that were higher than those allowed by pollution guidelines. LDEQ sampling of fish in the Mississippi River in Louisiana found mercury, the heavy metal of most concern, in 84 percent of the samples, though at very low levels. The average level for all fish samples was one-eighth the alert level and the highest amount found in any single fish was still well below guidelines.

Nutrients. These are elements such as nitrogen and phosphorus that are used by plants in their growth. An oversupply of these nutrients can cause increases in algae growth, and an overabundance of algae can cause taste and odor problems in drinking water. Also, when algae die, their decay can cause oxygen shortages that kill or stress fish and also change the chemistry of

the water in ways that allow heavy metals to move out of sediments into the water. Nutrients can come from many sources, including human and animal wastes, household cleaners and detergents, lawn and crop fertilizers, and industrial wastes. USGS studies estimate that 75 percent of the nutrients currently carried by the river are from human activities. Nitrogen, in the form of nitrates, is the nutrient of most interest. High nitrate levels in river water are the suspected cause of events such as the hypoxic area (dead zone) in the Gulf and the 1997 toxic algae bloom in Lake Pontchartrain. Nitrate levels in the river have increased since the turn of the century and are considered very high.

Pesticides. The USGS estimates that two-thirds of all pesticides used for agriculture in the U. S. are applied in the Mississippi drainage basin, and that about 3 percent of them end up in the water. The states of Iowa and Illinois are the main sources. Modern agricultural pesticides break down relatively quickly and do not accumulate in animals as much as those used years ago. The average annual concentrations of all pesticides measured in the Mississippi River are well below health-based limits and do not violate the Safe Drinking Water Act. LDEQ fish sampling did show some pesticides in fish flesh. Dieldrin was found in one composite sample in a concentration of 0.80 ppm, which is above the FDA alert level of 0.30. The good news is that the overall average of dieldrin for all the samples was only 0.01. At this level of concentration, the risk of a person getting cancer from eating one eight-ounce meal of Mississippi River fish per week for 70 years is about 1 in 10,000.

Chemicals. The USGS conducted a study on four chemicals: PCBs, chlordane, DCPA (chlorthal), and hexachlorobenzene. Although PCBs and chlordane were banned some time ago, they still persist in the environment. DCPA has been so widely used that its sources cannot be pinpointed. Some PCBs and chlordane were found in almost every sediment sample taken. The Ohio River contributes the largest share of these chemicals to the Mississippi River. DCPA was also found widely throughout the river, but hexachlorobenzene, in contrast, has more specific sources. Five times as much comes in from the Ohio River than from any other source on the upper Mississippi River. In the lower river, significant concentrations of the compound are added to the Mississippi River as it flows through the industrial area between St. Francisville, Louisiana, and New Orleans. Because these chemicals can concentrate in living animals, catfish were sampled up and down the river. None of the chemicals were found in high enough concentrations in fish to be of health concern. PCB levels in catfish were highest in the upper Mississippi River and in the Ohio River. LDEQ fish sampling showed that the average amount of PCBs in river fish was only four-one thousandths of what would be needed for a health alert. Chlordane was highest in the Ohio River and in the Mississippi River in Missouri. The highest concentration of hexachlorobenzene was in fish from the Mississippi River near Luling, Louisiana. DCPA concentrations in fish were found to have gone down slightly during the years from 1976 to 1981.

LDEQ concluded: "In summary, the likelihood of consuming sufficient fish, solely from the Mississippi River, of a single species, with any or significant levels of contaminants, and over a long enough period of time to cause harm is extremely low." USGS concluded that water quality in the Mississippi River is improving, mainly because of changes made by chemical manufacturing industries and improved wastewater treatment by cities and industries. The USGS report does caution that it only provides a brief look at the water quality of the river.