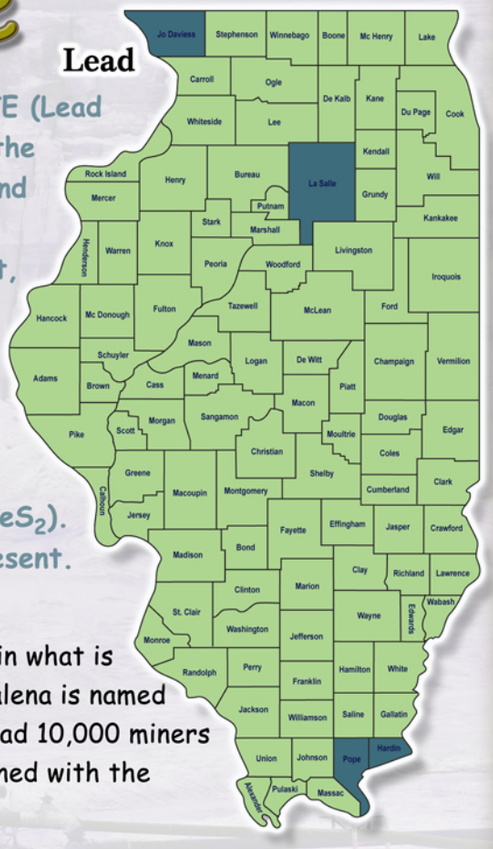
ILLINOIS' mining... Galena, Sphalerite, and Pyrite

Lead, in the form of GALENA (Lead Sulfide, PbS) and CERUSSITE (Lead Carbonate, $PbCO_3$) has been mined for thousands of years in the Upper Mississippi Valley, which includes Iowa, Wisconsin, and Illinois. Before the French explorers arrived in the Upper Mississippi Valley in the 1600's, lead was used as a pigment, for fishing nets, and cultural artifacts. Other significant minerals associated with the lead deposits include SPHALERITE (Zinc Sulfide, ZnS), smaller amounts of SMITHSONITE (Zinc Carbonate, $ZnCO_3$), and PYRITE (Iron Sulfide, FeS_2). Minor amounts of copper, silver and barium are also present.



Lead production began in Iowa as early as the late 1700's, however it was not discovered in what is now Jo Daviess County Illinois until 1810. Illinois became a state in 1818. The town of Galena is named after this mineral. Most Illinois ore deposits had been discovered by 1830 and the area had 10,000 miners and settlers. Lead production peaked in 1847 depleting much of the deposits. This, combined with the discovery of gold in California, caused a major population exodus afterwards.

The associated minerals, including zinc, were initially wasted due to difficulty in the smelting process. Effective smelters for zinc processing were eventually established in the 1860's in LaSalle, Illinois and production peaked during World War I. This also allowed the copper, silver and barium to be salvaged. Pyrite was also mined for a short period of time to produce sulfuric acid.

In the early 1800's lead and zinc were also discovered in southeastern Illinois in association with the fluorite (CaF_2) deposits, Fluorite was originally considered a waste product but is now an important industrial mineral.

During the active production period in Illinois, lead was primarily used for munitions, plumbing, and as a paint additive. Zinc was used to galvanize steel to prevent rust. The last Illinois lead-zinc mine, located in Jo Daviess County, closed in 1975 due to low ore concentrations as compared to deposits in other states and countries.

Today lead is primarily produced in Alaska and Missouri and is used in automotive and power storage batteries, radiation shielding, specialized ceramics, and in electronic devices.

Today zinc is primarily produced in Alaska, Tennessee, Idaho, and Washington and is still used to galvanize steel. Other uses include medicines, vitamins, plastic, rubber, electronics, and making brass.

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