



Underground Injection Control: AK Steel Corporation

Facility Name: AK Steel Corporation

Facility Location: 1801 Crawford Street
Middletown, Ohio 45042

Ohio UIC Permit Numbers: UIC-05-09-001-PTO-I (Well #1)
UIC-05-09-002-PTO-I (Well #2)

AK Steel Corporation, located at 1801 Crawford Street, Middletown, Ohio, operates two Class I hazardous underground injection wells. According to the AK Steel website: "Headquartered in West Chester, Ohio (Greater Cincinnati), AK Steel is a world leader in the production of flat-rolled carbon, stainless and electrical steel products, primarily for automotive, infrastructure and manufacturing, construction and electrical power generation and distribution markets. The company operates seven steel plants and two tube manufacturing plants across five states: Indiana, Kentucky, Michigan, Ohio and Pennsylvania."

These wells, which began operation in 1969, are used to dispose of a waste fluid commonly referred to as spent pickle liquor (SPL) which consists of hydrochloric acid, iron salts, and water. The waste stream is considered hazardous due to its corrosivity (pH < 2) and toxicity (lead and chromium) characteristics. SPL is generated at AK Steel when hydrochloric acid is used to remove iron scale from the surfaces of steel produced onsite. As of October 1, 2014, cumulative injection totaled approximately 597 million gallons.

The injection zone of the wells' is separated from the lowermost underground source of drinking water by approximately 1900 feet of shales, limestones, dolomites and sandstones. The waste stream is injected into the lower Eau Claire Formation, the Mount Simon Sandstone, and the Middle Run Formation at depths in excess of 2900 feet below ground level.

The permits to operate issued to AK Steel specify maximum injection pressure limitations, require mechanical integrity testing and include many other operational and testing requirements. Ohio EPA issued the original permits to operate (PTO) for both of AK Steel's injection wells on October 7, 1986. In August 1990, U.S. EPA approved information and mathematical modeling provided in the facility's Land Ban Petition to demonstrate, with a reasonable degree of certainty, that the injected waste will not migrate vertically out of the injection zone and not more than two miles laterally from the wells in a period of 10,000 years. In 2008, U.S. EPA re-issued AK Steel's Land Ban Exemption which models out to the year 2017. UIC renewal permits were issued on May 15, 2013 and expire on May 17, 2019.

Table 1

Well No.	Drilled*	Began Operation	Max. Injection Pressures	Annulus Pressure**	Total Depth***
1	3/3/67	June 1969	633 psi	50 psi > IP	3,296 feet
2	4/24/68	May 1969	634 psi	50 psi > IP	3,285 feet

* Well construction completed

** Annulus pressure must be at least fifty (50) psi greater than injection pressure (IP).

*** Total depth measured from ground level.