

## The Dow Chemical Company in Times of War and Peace

Chemical industry has had a profound effect on the way we live. From household plastics to medical miracles, mankind has advanced in ways never before thought possible. A major contribution to this advance was provided by the Dow Chemical Company. As of 2002, the Dow Chemical Company was one of the world's largest diversified chemicals and plastics companies with sales of \$27.6 billion, employing 50,000 people worldwide ("Dow Chemical" 261).

It was the genius of founder Herbert Henry Dow that allowed his chemical business to thrive in tumultuous times. While the Dow Chemical became prominent around 1897, the onset of World War I in 1914 strengthened its relations with the military. Each war thereafter deepened the military bond with Dow Chemical. Dow's growing ties with military needs eventually caused a serious problem in public relations after Dow's manufacture of Agent Orange and Napalm during the Vietnam War.

Herbert Henry Dow began his career in Michigan around 1890 when he received backing for the electrolysis of brine to produce bromine. Dow obtained bromine and other chemicals from the prehistoric brine of Lake Michigan. To separate the halides from the brine, Dow experimented with electrolysis during a time when the electric light bulb was still viewed with skepticism. His patented process was a success. Dow started the Midland Chemical Company in 1890. Dow's electrolytic method was unique in that it produced little salt-byproduct and required only a small amount of energy. Bromine was essential for making the medical drugs of that time, Dow quickly cornered the U.S. market and began to expand internationally. Creation of the Dow Chemical Company, and subsequent absorption of the Midland Chemical Company, allowed Dow to gain a strong foothold in the chemical industry. Success however was short lived because the *Deutsche Bromkonvention*, a powerful group of German bromide producers, declared an all-out price war against Dow Chemical Company. Due to a German monopoly on the world supply of bromides, the *Deutsche Bromkonvention* was able to flood the U.S. market with their cheap product. Although Herbert Henry Dow suffered financial losses, one of his strategies was to resell the cheap German bromine for higher prices abroad. The Bromine War waged on, but World War I would soon turn the tides.

World War I started in the summer of 1914 with the assassination of Archduke Franz Ferdinand. At that time, the American chemical industry was in its infancy. Much of the U.S.'s chemical needs were imported from Europe, but as World War I raged on and imports (especially for Germany) were cut off, the American industry turned to American chemical producers. Dow Chemical became a leading manufacturer of phenol (for explosives) and magnesium (for incendiary devices). To avoid reliance on foreign chemicals, the U.S. imposed tariffs to help foster the chemical industry at home. The increase in growth, tariffs on European chemicals and the ready availability of halides facilitated proliferation of the American pharmaceutical industry and photographic industry (primarily Kodak). Between 1920 and 1930, the Dow Chemical Company nearly quadrupled sales to \$15 million (The Dow Chemical Company 1).

As the Depression began, about 1930, Herbert Henry Dow died. His son Willard Dow succeeded him. This change in management turned the company's focus to research (as opposed to sales) as Willard Dow began to emphasize production of petrochemicals and plastics.

Starting in 1939, World War II not only stimulated the U.S. economy; it also showed that Dow's prewar investments had proved to be extremely profitable. At the start of America's participation in the war (1941), the military realized that they had overlooked the importance of magnesium in aircrafts. Turning to Dow Chemical for aid led to a strengthening of the corporate-military bond. Dow was producing 80% of the government's need for magnesium during the war.

Because Dow had invested in synthetic plastics before the war, Dow also became a key producer of styrene and butadiene (for synthetic rubber) after Japan had taken control of the rubber plantations of the Far East. Another key synthetic plastic to come out of World War II was Saran film; this product allowed Dow to come part of the civilian market for food packaging. Dow further ventured into the consumer market by creating such household names as Ziploc bags, Scrubbing Bubbles, and Styrofoam insulation. As World War II came to an end, Dow had become a major component of American industry. Dow then began a period of expansion.

Throughout the 1960s, Dow Chemical grew at a rate of about 10% per year as their product line expanded ("The Dow Chemical Company" 1). In addition to the

production of pharmaceuticals, bulk chemicals, magnesium and agricultural chemicals, one of Dow's products drew significant attention: Napalm.

Napalm is a jellified gasoline made of polystyrene, gasoline and benzene; it was used as an incendiary liquid during the Vietnam War. During that War, the U.S. government once again turned to the Dow Chemical Company to produce chemicals required for the war effort. The efficiency of Napalm lies in its adhesiveness and its extreme burning ability; Napalm burns at 2060°C, a temperature "more than three times the melting point of structural steel." In Vietnam, American commanders preferred Napalm to high explosive weapons because it is more effective in close combat and especially useful in jungle operations (Gaines Junction 1). Dow also produced a powerful defoliant known as Agent Orange that contains carcinogenic dioxins as a byproduct.

In 1966, students and political activists began to raise questions concerning the use of chemical warfare and to protest against Dow Chemical campus recruiters. Dow defended its position by denying responsibility for U.S. foreign policy, saying that it would aid the military in any way possible. Although the protests had little effect on the profitability of Dow Chemical, they changed the image of a company that preferred to be associated with Saran wrap instead of chemical weapons ("The Dow Chemical Company" 1).

Because millions of consumers use Saran wrap to cover a casserole, or herbicides to keep a garden weed-free, the Dow Chemical Company has influenced our standard of living in the U.S. and abroad. Despite a modest beginning in bromine manufacture, Dow had the foresight to introduce new products for a large and receptive market. Dow's managers, scientists and engineers were able to ensure a permanent position as a chemical powerhouse through partnerships with the military and with a variety of civilian corporations. Although war has played a major role in the success of the company, Dow's success follows from its ability to offer innovative and useful products in times of war and peace. Because of its consumer success for about a century, the word Dow has become a household name.

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