

# The basis for today's weapons of war

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During World War Two, many types of technology were being invented and advanced. Most types of technology are often discovered by or at least first utilized by the government and military, and there is no time in which this is more evident than in wartime. All countries want to be the most advanced and have the newest technology that would be even unimaginable to their counterparts. World War Two was in some ways, the beginning of a time filled with much technological advancement. All of the more prominent countries of the free world were involved in advancing these new types of technology.

Some countries were the engineers and others were the followers. The United States, who remained neutral during the first half of the war, were the most prominent engineers of this time of technological advancement. Many new weapons were being used by all of the countries built with technology first developed by the United States. Decoding machines were becoming more prevalent in this War than in any other before. Aviation technology, along with submarines were being advanced. And of the most useful aspects of technology in World War Two, was Nuclear Energy.

The advancement of nuclear technology as used in the invention of the Atomic Bomb was the most valuable of all the types of technological advancement in World War Two. The discovery of x-rays in 1895 was the first step toward nuclear energy research. Wilhelm Roentgen discovered x-rays in 1895 when he noticed that some fluorescent material was glowing that he had laying near a covered cathode ray tube (Rhodes, 42). When he put his hand between the tube and the material he could see the glow was a little

more dull but still visible. He could also see bones of his hand as a reflection on the material.

Roentgen realized that whatever the substance was that was making the material glow, was penetrating the black paper cover of the tube and thus creating this reflection. After Roentgen's discovery of the x-rays, in 1896, Henri Becquerel wondered what the substance was that could make the fluorescent material glow. He conducted some research of his own only to discover radioactivity. However, it was not named radioactivity until later by Marie Curie. Becquerel discovered the first radioactive element of Uranium. Himself, Curie and others went on to discover many other radioactive elements.

Radium was discovered by Curie in 1898 and found to emit more heat at one time than any other substance (Walker). Another chemical/physical process was not found that could change the release rate of energy until 1939 when uranium fission was discovered. These discoveries came right in time for WWII. This was the beginning of atomic research by the United States as well as other countries. President Franklin D Roosevelt received a letter from Albert Einstein in August of 1939 informing of German Atomic research and the potential for a bomb.

Roosevelt immediately "... ormed committees to investigate military implications of atomic research (EM)". In the mean time, the United States, whom was neutral prior to the attack on Pearl Harbor in December of 1941 by Japan, entered the war. The United States were now in more of a hurry to research atomic energy. After much more research, the United States

decides to start the building of an atomic bomb, before the Germans (Rhodes, 431). This secret project was known as the Manhattan Project with General Leslie Groves in charge. Locations that contained research facilities were Washington, Tennessee, and New Mexico.

Much research was also done at many university laboratories that included Columbia, New York and Berkeley, California. Many people, including civilians were hired for this top-secret mission. The employees did not even know what they were working on until the bombing of Hiroshima in 1945. The site chosen for the center laboratory in November 1942 was in Los Alamos, New Mexico. Robert Oppenheimer was selected as the director of this site (Hoddeson, 6). The goal to be achieved at this site was to create a bomb small enough that could be carried by an airplane but also contain enough nuclear power.

The scientists at the Los Alamos site were simply told that they were working on a project that may help end the war. Altogether, 5, 000 people worked and lived with their families at Los Alamos. 300, 000 people across the states were involved in the project. Many experiments and tests of nuclear energy were performed but never a full-scale test of an actual explosive weapon until July 1945, 18 months after a site was established to do so (Rhodes, 667). This site was to be known as Trinity and it opened in March 1944 in Alamogordo, New Mexico. In July 1945, the first successful test of a nuclear weapon was complete.

President Franklin D. Roosevelt died on April 12, 1945 of a cerebral hemorrhage. Vice President Harry Truman knew nothing about the

Manhattan Project and was briefly informed of it the same day that he took over the Presidency. President Truman, who had taken over office only 4 months sooner, made the decision to drop the Atomic Bomb on Hiroshima, Japan on August 6, 1945. Nagasaki, Japan was also bombed on August 9, 1945. The United States had succeeded in being the first in detonating an Atomic Bomb. The time and money that the United States had put into atomic research had paid off.

Japan Surrendered and World War Two would soon come to an end. The end of World War Two brought along with it another beginning – The beginning of the Cold War. The years of the Cold War included a great threat in which many countries were at a race for nuclear warheads. The Soviet Union and the United States were the most prominent of these countries. Between the two, they had more than 40, 000 nuclear bombs (Drell, 132). This made up 99 percent of all the nuclear explosives in the world. This threat lasted until the Cold War ended in November of 1990.

This was done by a pact signed at the United Nations Conference on Security and Cooperation in Europe (EM). In July 1991, the United States and the Soviet Union also signed their own pact to cut back on nuclear arms by more than 30 percent within a time period of seven years. After the United States dropped the bombs on Hiroshima and Nagasaki, not only did it bring with it the Cold War, but also the after effects of the nuclear explosions. Although World War two ended in August of 1945, the underlying effects of the atomic bomb have stayed with us, not to mention the immediate effects.

The immediate effect of course included the destroyed cities and many casualties. In Hiroshima, the deaths that occurred the same day and were caused by the blast totaled to 45, 000. The deaths that occurred 2 days - 4 months afterward came up to 19, 000 (Kondo, 4). The numbers of deaths in Nagasaki were slightly less. 22, 000 immediate casualties from the initial blast and 2 days - 4 months later there were 17, 000 deaths due to the bombing. This is not mentioning the other surviving casualties who suffer from other effects.

There was more surviving casualties than deaths caused by the bombings. The most recent data showed there to be 73, 884 people dead and 74, 909 people injured (Kondo, 4). Of the people that died 2 days to 4 months after the bombing, the causes of death consisted of burns, lesions, and radioactivity and bone marrow injury. Many of the people that did survive lost their homes and their means of survival. All of the survivors in the areas in and around Hiroshima and Nagasaki suffered from immense amounts of radiation and radioactive fall-out caused by the bombings.

Some died of the initial radiation, but more died of residual radiation. Of the people that died of a bone marrow injury, it was mostly because the leukocyte count was so low. The people did not have enough white blood cells, the cells that fight sickness and infection, to heal themselves (Kondo, 7). People with open wounds, lesions, died of infectious disease. And others suffered from heat caused by the blast and serious burns that could not heal. It is believed that the radiation resulting from the bomb is responsible for many defects that occurred in newborn babies.

Atomic energy is a very serious type of technology. It is in no way meant to be taken lightly. This is the one type of technology created by humans that could bring about the destruction of all humankind. While it was very useful in bringing about the end of World War Two, it could just as easily start other wars. Many lives were probably saved by the use of the Atomic Bomb in WWII. Had the war continued, many more people from many countries would have died. It is evident that the bombings created a tremendous amount of grief caused by the pollution and medical effects.

Many efforts still exist to this day to treat people suffering from the underlying effects of the bomb and to clean up much of the land and air pollution that was caused by the radiation. Today, there are many other uses of nuclear energy rather than just bombs. There are many nuclear power plants. Efforts are also being made to keep these plants under control and to regulate the amount of waste and pollution produced by them. I hope that we are all aware of the many advantages of nuclear energy and appreciate it but also to know of the many dangers created by nuclear energy as well.