Effects of the Atomic Bomb
(1945)
The United States Bombing Survey

Introduction
Few actions of the United States government remain as controversial as the dropping of the atomic bombs on Japan to end World War II in the Pacific. On August 6, 1945, a single atomic bomb was dropped on the Japanese city of Hiroshima. Three days later a second bomb was detonated at Nagasaki. No one at the time knew exactly what this new form of weaponry would accomplish, which was reason enough for several prominent American scientists to oppose its use. Within days it was obvious to the world that the United States possessed the most awesome and destructive technology imaginable. In 1944, a joint Army-Navy group, the United States Strategic Bombing Survey, had been organized to study the effect of the air war on the military, economic, and political structures of Germany and Japan. Their report on Hiroshima and Nagasaki enormously influenced both government policy and popular perceptions of atomic bombs.

Source
A single atomic bomb, the first weapon of its type ever used against a target, exploded over the city of Hiroshima at 0815 on the morning of 6 August 1945. Most of the industrial workers had already reported to work, but many workers were enroute and nearly all the school children and some industrial employees were at work in the open on the program of building removal to provide firebreaks and disperse valuables to the country... Because of the lack of warning and the populace's indifference to small groups of planes, the explosion came as an almost complete surprise, and the people had not taken shelter. Many were caught in the open, and most of the rest in flimsily constructed homes or commercial establishments.

...Hiroshima was uniformly and extensively devastated. Practically the entire densely or moderately built-up portion of the city was leveled by blast and swept by fire. A "fire-storm" developed in Hiroshima: fires springing up almost simultaneously over the wide flat area around the center of the city drew in air from all directions... The "fire-wind" attained a maximum velocity of 30 to 40 miles per hour 2 to 3 hours after the explosion. The "fire-wind" and the symmetry of the built-up center of the city gave a roughly circular shape to the 4.4 square miles which were almost completely burned out...

At Nagasaki, the scale of destruction was greater than at Hiroshima, though the actual area destroyed was smaller because of the terrain and the point of fall of the bomb. The Nagasaki Prefectural Report describes vividly the impress of the bomb on the city and its inhabitants:

Within a radius of 1 kilometer from ground zero, men and animals died almost instantaneously from the tremendous blast pressure and heat; houses and other structures were smashed, crushed and scattered; and fires broke out. The strong complex steel members of the structures of the Mitsubishi Steel Works were bent and twisted like jelly and the roofs of the reinforced concrete National Schools were crumpled and collapsed, indicating a force beyond imagination. Trees of all sizes lost their branches or were uprooted or broken off at the trunk...

...The most striking result of the atomic bombs was the great number of casualties. The exact number of dead and injured will never be known because of the confusion after the explosions. Persons unaccounted for might have been burned beyond recognition in the falling buildings, disposed of in one of the mass cremations of the first week of recovery, or driven out of the city
to die or recover without any record remaining... The Survey believes the dead at Hiroshima to have been between 70,000 and 80,000, with an equal number injured; at Nagasaki over 35,000 dead and somewhat more than that injured...

Most of the immediate casualties did not differ from those caused by incendiary or high-explosive raids. The outstanding difference was the presence of radiation effects, which became unmistakable about a week after the bombing.

The seriousness of these radiation effects may be measured by the fact that 95 percent of the traced survivors of the immediate explosion who were within 3,000 feet suffered from radiation disease...

A plausible estimate of the importance of the various causes of death would range as follows:
Flash burns, 20 to 30 percent.
Other injuries, 50 to 60 percent.
Radiation sickness, 15 to 20 percent...

...The flash of the explosion, which was extremely brief, emitted radiant heat traveling at the speed of light. Flash burns thus followed the explosion instantaneously...

Survivors in the two cities stated that people who were in the open directly under the explosion of the bomb were so severely burned that the skin was charred dark brown or black and that they died within a few minutes or hours...

Because of the brief duration of the flash wave and the shielding effects of almost any objects-leaves and clothing as well as buildings-there were many interesting cases of protection. The radiant heat came in a direct line like light, so that the area burned corresponded to this directed exposure. Persons whose sides were to-ward the explosion often showed definite burns of both sides of the back while the hollow of the back escaped.

People in buildings or houses were apparently burned only if directly exposed through the windows. The most striking instance was that of a man writing before a window. His hands were seriously burned but his exposed face and neck suffered only slight burns due to the angle of entry of the radiant heat through the window...

Unfortunately, no exact definition of the killing power of radiation can yet be given, nor a satisfactory account of the sort and thickness of concrete or earth that will shield people... In the meanwhile the awesome lethal effects of the atomic bomb and the insidious additional peril of the gamma rays speak for themselves.

There is reason to believe that if the effects of blast and fire had been entirely absent from the bombing, the number of deaths among people within a radius of one-half mile from ground zero would have been almost as great... Instead of being killed outright as were most of these victims, they would have survived for a few days or even 3 or 4 weeks, only to die eventually of radiation disease...
Questions to Consider

1. When was the first atomic bomb dropped?

2. Why did the explosion come as almost a complete surprise to the residents of Hiroshima?

3. Describe the effects of the dropping of the bomb on Hiroshima.

4. Compare the scale of destruction in Hiroshima with that in Nagasaki.

5. Explain the importance of the lack of scientific knowledge about the long-term effects of radiation.

6. Does this article seem to support or disagree with the usage of atomic bombs on Hiroshima and Nagasaki? Quote 3 pieces of evidence from the text to support your opinion.

   a.

   b.

   c.