**NUCLEAR WEAPONS**

A nuclear weapon is one out of the three types of weapon of mass destruction. A weapon of mass destruction is a term used to characterize a variety of weapons that share two key features: their potential for large scale destruction and the indiscriminate nature of their effects, notably against civilians. Some people have argued that Nuclear weapons should be distinguished from all other weapons of mass destruction because of its horrific and unmatched destruction power. There’s approximately 30,000 nuclear weapons worldwide in the national stockpiles of the eight nuclear weapon states i.e. Britain, China, France, India, Israel(assumed), North Korea(claimed) Pakistan, Russia and the United States. As at now, the United States and Russia maintain several thousand nuclear weapons on hair-trigger alert, or what is termed “launch on warning” of a nuclear attack. It is believed that China does not keep its nuclear force on alert status and that Britain and France maintain their nuclear forces on lower levels of alert and the information on stockpiles of Israel, Pakistan and India are incomplete and contradictory. Also, it is impossible to give an exact figure on the makeup and yield of government arsenals because of government secrecy. According to the 2005 edition of the SIPI yearbook, the estimated figure of nuclear weapons deployed worldwide by eight countries is 13,470 with another 14,000 held in reserve.

Since 1945, no nuclear weapon has been used in conflict even though combatants including nuclear weapon states have fought approximately 100 wars within 60 years. The inventory of 30,000 nuclear weapons in existence nationwide is roughly half of the number of nuclear weapons that existed during the peak of the cold war era though, the weapons in existence now possess an explosive power 20 times greater than the nuclear weapons that destroyed much of Hiroshima and Nagasaki in Japan and killed roughly 250,000 people during the second world war. Since nuclear weapons have been part of states arsenals for more than half of a century, there is a tendency among policy makers towards the tacit acceptance of this weapons despite how dangerous they are. Manhattan project scientist Wolfgang Panofsky noted recently in a presentation commemorating the 60th anniversary of the first nuclear test, those nuclear weapons have increasingly come to be seen as: ‘symbols of strength and prestige, and tools for diplomatic bargaining’. Some decision makers are even searching for new missions where conjectured circumstances might give advantage to nuclear weapons over conventional munitions. Hence, such efforts risk the long standing taboo against the use of nuclear weapons.

Nuclear bombs just like other conventional bombs were designed to cause damage through an explosion that releases a large amount of energy in a short period of time. The difference however is, in conventional bombs the explosion is created by a chemical reaction which involves the rearrangement of atoms to form new molecules and in nuclear weapons, the explosion is caused by changing the atoms themselves either by splitting them or fusing them together to form new atoms resulting to an enormous amount of energy being released. A nuclear bomb using one kilogram of plutonium could have the same explosive force as approximately 15 million kilograms of the conventional TNT.

The two main types of nuclear weapons include: fission weapons and fusion weapons. In fission weapons, atoms are split. The core of a fission bomb is made up of either plutonium or highly enriched uranium. Both atoms are heavy meaning they have large a large number of protons and neutrons in the nucleus. During fission, when the heavy nucleus splits into smaller nuclei, extra neurons are released and if these neurons are absorbed by other nuclei, they can in turn split and also release neurons setting off what is known as a chain reaction. Plutonium or highly enriched uranium are the only materials known that if carefully designed , can cause such a devastating, powerful , self-sustaining fissile chain reaction. In fusion weapons, often known as colloquially hydrogen bombs, two isotopes of hydrogen namely deuterium and tritium are fused to either to create heavier atoms. This is the same reaction that occurs in the center of the sun. Fusion can only happen at high temperature and pressure. In a fusion weapon, such a state is created by using a fission explosion (i.e. an atomic bomb) to trigger the fusion reaction. Theoretically, there is no limit to the explosive force of a fusion weapon. Fusion weapons are typically 10 to 100 times as explosive as the fission bombs dropped on Hiroshima and Nagasaki.

The effects of nuclear weapons are diverse since the different forms of energies produced by them have their own devastating effects. This can be: blasts, thermal radiation, electromagnetic pulse, direct nuclear radiation and fallout.

**Blast**: the rapid release of energy in an explosion creates a shockwave equivalent to several thousands of pounds of pressure per square inch. This is more than enough to crush most objects on earth. Brick houses and human lungs can be crushed about 30 psi pressure or less.

**Thermal radiation**: thermal radiation includes light and heat. The heat from a nuclear explosion is so intense that nearly all materials at the center of the explosion (epicenter) are immediately vaporized and the fireball created from the thermal radiation rapidly expands outward consuming oxygen. This combined with the blast effect creates near to total destruction for some distance from the epicenter. The light produced by a nuclear explosion can be seen from hundreds of miles away and its intensity can make sand explode, blind people, burn shadows into concrete, ignite flammable materials at large distances and burn human skin.

**Electromagnetic pulse**: a nuclear explosion sends out an electromagnetic pulse similar to the thermal pulse. This doesn’t directly harm humans; it can increase the devastation at the site of a nuclear explosion because it disables all electrical devices in its path including computers, communication and medical devices

**Direct nuclear radiation**|: nuclear explosions release several forms of radiation. Both gamma rays and neutrons easily penetrate solid objects and are deadly. Beta and alpha particles are generally less dangerous and have shorter ranges. Alpha particles cannot penetrate the skin but if ingested can cause the most harm to the human body

**Fallout**: fallout consists of large numbers of particles from the earth, buildings and other ground objects which are propelled upward and mix with the radioactive products of explosion. Some of this material will fall back within a few minutes while some will continue its descent for about 24 hours. This is the most insidious effect of a nuclear explosion because the area of exposure to fallout is much wider and more unpredictable than that of direct nuclear radiation.

Radiation on human beings can have short and long term effects depending on the dosage of radiation and whether the exposure is slow and protracted or large and instantaneous. Radiation affects cells in human body that actively divide such as those found in hair, bone marrow, intestinal tract and reproductive organs. This can be clinically detected and passed unto mutated or defective genes. With protracted exposure, cells may be repaired over a period but the delayed long term effects of radiation exposure include increased incidences of leukemia and thyroid as well as lung and breast cancers