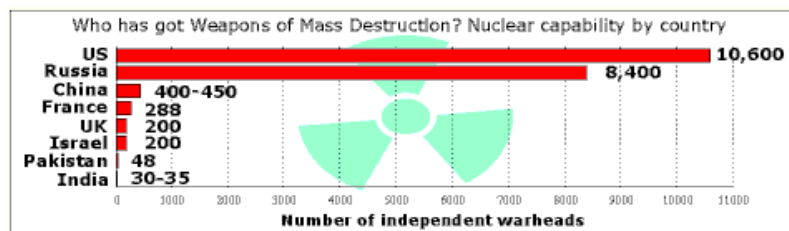




Nuclear Proliferation

Nuclear proliferation is the spread of nuclear weapons production technology and knowledge to nations that do not already have such capabilities. It has been opposed by many nations with and without nuclear weapons, who fear that more countries with nuclear weapons may increase the possibility of nuclear warfare, de-stabilize international or regional relations, or infringe upon the national sovereignty of individual nation-states. Other nations have pursued their own independent weapons development, calling into question the authority of some countries being able to specify who can or cannot have their own defensive nuclear weapons.



What nuclear fuel can be used for:

Highly enriched uranium (HEU) is used to fuel well over 100 research reactors worldwide in dozens of countries. Many of these facilities are in academic or industrial settings with inadequate security—making them ‘even more attractive targets for terrorists seeking nuclear weapons materials’.

| Types of Fissile Material | Main Uses <i>(Nuclear weapons uses in italics)</i> |
|-------------------------------------|--|
| Natural Uranium | some power reactors <i>military plutonium production reactors</i> |
| Low-Enriched Uranium (LEU) | most operating power reactors, some research reactors, French naval propulsion reactors |
| Highly Enriched Uranium (HEU) | many research reactors, U.S., British, and Russian naval propulsion reactors, nuclear weapons, <i>military plutonium and tritium production reactors</i> |
| Mixed Plutonium-Uranium Oxide (MOX) | some research and experimental reactors, some power reactors |
| Plutonium | <i>nuclear weapons</i> |

| Amount of fissile material needed to build an atomic bomb | | |
|---|--------------------------------|------------------------------|
| HEU (enriched to 90 percent U-235) | Simple gun-type nuclear weapon | 90 to 110 lbs. (40 to 50 kg) |
| | Simple implosion weapon | 33 lbs (15 kg) |
| | Sophisticated implosion weapon | 20 to 26 lbs. (9 to 12 kg) |
| Plutonium | Simple implosion weapon | 14 lbs. (6 kg) |
| | Sophisticated implosion weapon | 4.5 to 9 lbs. (2 to 4 kg) |

- In general higher enrichment = less HEU needed.
- Gun-type weapons: simple, most likely to be built by terrorist groups.
- Implosion type: more technical, but requires less HEU.

Present Policy: Global Nuclear Energy Partnership (GNEP)

1. February 2006 US Department of Energy announced GNEP.
2. USA sells nuclear fuel to countries provided they do not start forming infrastructure to process fuel in nuclear fuel cycle.
3. Advance Non-proliferation or inhibit it?
4. Union of concerned scientists claim that it will ‘add to proliferation’, but Bush administration disagree.