

Preface Too many people fail to recognize the distinction between the use of nuclear power in the generation of electricity and the wartime devastation of the nuclear bomb. The concern over this awesome power is understandable, but we must not lose sight of the many benefits that nuclear science has brought us over the decades. We must not let this concern deter us from continuing to harness nuclear energy to peacefully serve mankind.

While it can be said that comparing nuclear power and nuclear weapons is like comparing apples and oranges, the general public is concerned about the specific ways these two fields differ. This brochure addresses those concerns.

Q Are commercial nuclear power plants used to produce plutonium as a weapons-grade material?

A No. Plutonium produced in commercial nuclear power plants is used for fuel only. It is extremely complicated and very expensive to separate from the other elements in sufficient quantities for weapons production.

Q If commercial nuclear power plant reactors are not suitable for the production of weapons-grade materials, then what type of reactors are?

A Specific weapons-grade production reactors are designed to produce higher concentrations and larger quantities of plutonium-239 by using a fuel with different ratios of uranium-238 and uranium-235. In addition, the reactors are designed to be refueled more frequently.

Q Can a commercial nuclear power plant explode like a bomb?

A No. A nuclear explosion is absolutely impossible in a commercial nuclear power plant because the concentration of weapons-grade materials is not strong enough.

Q Why do some people try to link commercial nuclear power and nuclear weapons?

A The nuclear age was thrust upon the world as a bomb of awesome force, not a commercial nuclear power plant. As a result, the fear of nuclear war is worldwide. The traditional critics of commercial nuclear power are trying to connect their cause to this worldwide fear. Through such linkage by the nuclear power critics, a larger audience can be drawn upon to support their anti-nuclear power goals. It would be unfortunate and possibly disastrous if the unfounded concept of a linkage between U.S. commercial nuclear power and worldwide nuclear weapons proliferation were permitted to divert attention from the real need to control or even reverse the process of weapons proliferation.



Q How do commercial nuclear power plant fuel and weapons-grade fuel differ?

A Commercial nuclear power plant fuel in the United States uses 4% uranium-235 to heat water to produce steam ■

Nuclear weapons use at least 90% uranium-235 or plutonium-239* to produce a nuclear explosion ■

*Plutonium, a heavy metallic element, was originally discovered in the laboratory ■ Plutonium is radioactive and one of the basic ingredients in some nuclear weapons ■

Q Is there a connection between commercial nuclear power plants and nuclear weapons?

A Both are different applications of the same technology ■ The difference is that nuclear weapons were developed and are produced to be destructive devices ■ Commercial nuclear power plants were designed and built to produce useful electrical energy ■ The connection exists only in the basic nuclear fuels used and the word nuclear ■ Actually, if nuclear power were never developed, the threat of nuclear weapons would still exist ■

Bibliography

For additional reading:

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NUCLEAR POWER VS NUCLEAR WEAPONS

The distinction between nuclear power and nuclear weapons is clear . . . "They have nothing to do with each other" ■

Hans Bethe
Nobel Prize Winner



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