

## **Weighing the risks of plutonium power – Threat to public called virtually nil**

*A reasonable article by Mark Carreau*

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Close-up observations of Pluto would be impossible without the use of generators that rely on cancer-causing plutonium to produce electricity and heat for New Horizons' instrumentation.

Pluto is much too far from the sun to rely on power modules that convert sunlight into electricity.

The spacecraft will carry 24 pounds of non-weapons-grade plutonium, which could pose a cancer threat if dispersed into Earth's atmosphere.

A dispersal could be triggered by a rocket explosion during ascent or a failure in which the spacecraft plummeted back to Earth.

New Horizons' plutonium has been encased in fire-resistant ceramic and enclosed in iridium and graphite jackets designed to prevent dispersal even in the event of an explosion.

Still, said Bruce Gagnon, coordinator for the Maine-based Global Network Against Weapons and Nuclear Power in Space, which held a launch-site protest last weekend, "Space technology can and does fail. ... When you add plutonium to the equation, you are asking for trouble."

NASA's risk analysis places the odds of any kind of radioactive release during such flights at one in 350 launches.

A NASA study of one worst-case scenario placed the probability of a radiation release from a New Horizons crash within the 62-square-mile launch zone at one in 1.4 million. The odds of the crash itself were estimated at between one in 10,000 and one in a million. The risk of any one person developing cancer as a result of the exposure ranged from one in a million to one in 2 billion, according to the environmental impact statement.

A space agency-led response team that includes representatives of Homeland Security, the Federal Emergency Management Agency and state and local organizations will be assembled in Florida during New Horizons' launch period to respond to any accident.

Responders have been trained to protect the public from exposure, measure radiation levels and locate and recover radioactive materials, said NASA's Dwayne Brown.

The United States has launched plutonium generators on 25 missions dating to 1961, including Cassini, the spacecraft now orbiting Saturn.

Three early missions encountered difficulties.

A plutonium generator burned up in Earth's atmosphere after the 1964 launch failure of a navigation satellite. A generator was recovered intact after a 1968 launch failure of a weather satellite.

NASA's Apollo moon missions also carried the devices to power lunar experiments. When the Apollo 13 crew limped back to Earth in 1970 following a spacecraft explosion en route to the moon, the lunar lander and its radioactive cargo plunged deep into the Pacific Ocean.