

## NEWS

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### **Pakistan's plutonium**

**Satellite pictures suggest Pakistan is planning to increase its plutonium production. Geoff Brumfiel finds out what the images show, and why the discovery is important.**

**[Geoff Brumfiel](#)**

#### **What is going on in Pakistan?**



[Click here](#) to see the construction site in Google Earth.

To view this file you will need Google Earth installed on your machine. If you do not have Google Earth installed [click here](#).

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According to [a report](#) from the Institute for Science and International Security, a Washington-based nuclear watchdog, a 1,000-megawatt heavy-water reactor looks to be under construction in Khushab, a relatively empty part of Pakistan. The satellite picture (right) shows the entire construction site: the purported reactor is the large black square in the centre. Such a reactor could produce up to 200 kilograms of weapons-grade plutonium a year — enough to produce 40 to 50 nuclear weapons.

#### **Where do the pictures in the report come from?**

The pictures were taken by the commercial satellite-image provider Digital Globe, which sells high-resolution pictures and geographical information to anyone who wants it — customers include emergency planners and oil prospectors. These pictures are used by Google Earth, a free piece of software that allows you to zoom in on any part of the planet.

If you download Google Earth on to your computer, you can see the new facility [here](#). The circular facility to the northeast of the construction zone is an older, 50-megawatt heavy-water reactor, which at peak efficiency can produce enough plutonium for 3 to 5 bombs a year.

#### **Pakistan already has nuclear weapons, so why the fuss?**

The country is believed to have only between 25 and 50 nuclear weapons. And most of these bombs are thought to be relatively simple uranium weapons with 'modest' yields around the

size of the bombs that destroyed Hiroshima and Nagasaki.

If the new facility is what it seems to be, it would allow Pakistan to build a lot more bombs, according to John Pike, director of [globalsecurity.org](http://globalsecurity.org), a non-profit group that specializes in image analysis and is based in Alexandria, Virginia. Pike says that the reactor is "gigantic" and would allow Pakistan to increase its total number of weapons tenfold.

### **Why make plutonium?**

Plutonium can be used to construct smaller and more lightweight weapons than uranium. Most uranium bombs require 15 to 20 kilograms of material, but plutonium weapons can be built with as little as 5 kilograms. That makes it easier to fit plutonium warheads on missiles.

In addition, small plutonium bombs are often used to trigger larger hydrogen weapons. So the technology, says Pike, is an important step towards developing those bombs, which are thousands of times more powerful than uranium and plutonium weapons.

### **Could Pakistan start building more bombs right away?**

Probably not. The reactor seems to be still under construction and several years from completion. And to make bombs, Pakistan needs to chemically separate the plutonium from spent reactor fuel, which requires a special reprocessing facility. It is not known whether the country has such a facility, according to Pike.

Many other countries have plutonium-reprocessing facilities, including Russia, China, India, Israel, North Korea, the United States, Britain and Japan.

### **Why are people worried?**

"If Pakistan gets a big stockpile then India's going to have to get a big stockpile and the Chinese are going to have to go back and count their pennies," says Pike. The result could be an accelerating arms race in southern Asia.