



Connie Sheehan/Daily Nebraskan

Guards constantly monitor activists from a tower next to the entrance gate to the town of Mercury and the Nevada Test Site.

Ground zero

*Government officials say
safety comes first
at Nevada Test Site*

A thousand feet below the surface of the Nevada desert, a small nuclear device packed under gravel, cement and dirt is detonated.

With a temperature as hot as the sun's, the device explodes, melting solid granite. Molten rock falls to the bottom of a man-made shaft and hardens into a glass-like material.

As the air cools after the explosion, a cavity forms inside the shaft and, if the explosion is large enough, the sandy soil around the shaft sinks into the void forming a crater on the Earth's surface.

It could take months for the Earth to seal the cavity or it could fall in a matter of days.

Above ground, the reaction is sometimes never felt. But if the test is a large one, the movement can feel like a "ship rolling on the ocean," and can even move an on-site building -- intact.

The explosion cannot be heard on the surface.

The test itself takes less than a minute, but the entire project requires months of planning and carries a \$10 million price tag.

More than 8,000 people are connected in one way or another with experiments at the Nevada Test Site -- the only active nuclear weapons testing site in the United States.

Representatives from the Department of Energy, the National Oceanic and Atmospheric Administration, the Environmental Protection Agency, scientific advisers and radiologists oversee each test and are aided by a cast of others: construction workers, advisers, scientists, military personnel, security and support people.

They all work either at the site itself, which is in southwest Nevada, or in surrounding areas such as Las Vegas, according to Jim Boyer, public information officer for the Department of Energy.

Most of workers at the site, Boyer says, feel the nuclear tests are safe.

"We have 8,100 people connected with the test site and I don't know one of them that has ever been worried about safety," he says.

Boyer and other test site workers are not the only ones who think nuclear weapons testing today is safe.

Gerry Allen, radiological officer for the Nebraska Civil Defense Agency, says workers at the Nevada site are careful with the weapons tests.

"They do a lot of monitoring, checking markers and daily water and air samplings," he says.

Allen also says the Nevada site, which opened in 1951, is probably "the safest place in the world" to do nuclear weapons testing.

"The groundwater is so far underground and the granite is so hard," he says, that the chances of radiation contamination are small.

Boyer said a lot of preparation goes into each test before and after the explosion to prevent any kind of mishap.

Most tests occur 1,200 to 2,400 feet underground. Once the shaft for the device is drilled, it is guarded around the clock until it is detonated to prevent tampering, Boyer says.

Tests will not occur until weather is favorable and all other technicalities are taken care of, he says.

"We do not detonate unless we know if there was a leakage we would not hurt anyone," he says.

If the wind is blowing toward a populated area on the test date, the experiment is called off and workers will try again the following day, he says.

Radiological monitoring units also are placed at more than 100 designated areas at the site, and an additional 18 are located off the site.

Should radioactive material be vented into the air from a test, the monitoring units will track the leakage and its direction. A helicopter, two fixed-wing aircraft -- on and off-site -- and one Air Force plane also are on hand to track venting.

Once the device is detonated, the helicopter with a video camera records what happens following the explosion miles above ground zero.

Inside the site's control room, large screens linked to radiological equipment monitor possible venting. Multi-colored dots on the screen can track the venting and follow it.

If the test is a large one, workers at the test site are evacuated and people in the area are warned two days in advance. Checkpoints prevent strangers from wandering onto the test site, Boyer says. Media also are forewarned to relay the message to inhabitants of larger cities, he says.

Detonating a nuclear device, which is not yet made into a "bomb," takes several people.

"We make detonating as complex and difficult as possible for anybody who doesn't know our system," Boyer says. "No one person can flip a button."

The test also can be stopped manually, Boyer says.

"We have full control," he says.

If monitoring units give workers a green light following a test, meaning no radioactive material has been vented, many people leave the site and go home, and others begin conducting research.

Boyer says he feels "there is zero to worry about" following the tests.

But it wasn't always like that.

Before the Limited Test Ban Treaty of 1963, which restricted the United States and the Soviet Union to underground testing, most experimenting with nuclear weapons was done above ground and in the ocean.

According to the Union of Concerned Scientists, the