

# GANESAYER

NEWSLETTER of GEORGIANS AGAINST NUCLEAR ENERGY

FALL 2005

## PLUTONIUM WAITS

### PLUTONIUM FUTURES and the South

by Glenn Carroll

THE ATOMIC COLD WAR between the U.S. and Russia ended in 1990, and now the fate of plutonium, the essential ingredient in nuclear bombs, has come to rest.

Differing factions hotly compete to establish the future of 50 tons, roughly one half, of U.S. plutonium stocks: to immobilize plutonium as a nuclear waste; to manufacture a new and experimental type of nuclear fuel called MOX; or to manufacture more nuclear bombs. Vested interests rush to advance their favored program before the winds of politics change — but plutonium waits.

In South Carolina, in New Mexico, in Washington, California and Texas, in warehouses, in silos and submarines — plutonium waits. With a half-life of 24,600 years, and a hazardous life ten times that long, plutonium can afford to wait!

THE “NATURE” OF PLUTONIUM IS UNIQUE — literally the brainchild of human ingenuity — plutonium does not occur in nature. As such, plutonium has no “home” from



*Trinity: 5:30 a.m., July 16, 1945 The atomic age begins with the Trinity atomic blast in the Alamogordo Desert of New Mexico. Trinity was the prototype of the plutonium bomb that pulverized Nagasaki. It detonated with unexpected violence, four times the Los Alamos Lab's estimates. Photo by Berlyn Brixner courtesy Los Alamos National Laboratory.*

which it came or to which it can be returned, and it poses the gravest of challenges to human society.

Plutonium is a “side effect” of nuclear power in a nuclear reactor. Uranium fission (nuclear power) was developed for only one purpose — to create plutonium for weapons of mass destruction — The Bomb. The U.S. made about 100 tons of plutonium; Russia about 180 tons. When

you contemplate that an atom bomb can be fashioned from as little as 15 pounds of plutonium in a home basement — it hits home that plutonium security is indeed a serious, even urgent, matter.

It was an afterthought to make electricity from the great heat generated in the uranium fission process. It was exported nuclear technology for energy that gave India The Bomb; gave Pakistan The Bomb; gave Israel The Bomb; gave North Korea, Iran, Libya — you get the picture!

PLUTONIUM'S TOXICITY IS INFAMOUS — one particle lodged in a lung sentences its host to lung cancer. It is said that if one pound of plutonium could be evenly distributed it would cause lung cancer in every human on earth. With a half-life

**WE GROUND ZERO FOR NEW NUKE!!**

**new nukes? new bombs? nuclear waste? oh my!!!**

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WE REMEMBER YOU.

JANET

WHEN WE GATHER OUR POWER  
WHEN WE SPEAK TRUTH TO POWER  
WHEN WE WALK IN COMMUNITY  
WHEN WE STAND FOR LIFE  
IN THE DEATH CULTURE OF THE NUCLEAR  
WHEN WE LAUGH AND TAKE HEART  
AS IF THE FORCE SHAPING  
OUR WORLD IS PEOPLE  
POWER IN DEED  
WE REMEMBER YOU.

*Janet Lowe*

GANE FOUNDER  
1953 - 1981

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# PLUTONIUM

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of over 24 millennia it challenges the limits of human imagination to grasp the environmental risk posed to Earth's inhabitants by hundreds of thousands of pounds of plutonium.

Plutonium poses a tremendous security threat because of the ease with which, once obtained, it can be made into a nuclear bomb. Yet, despite its capacity for exploding with a force that can destroy entire cities, or cause lung cancer with one particle, plutonium is a "low-activity" element that can be safely carried in the coat pocket of a would-be thief. Plutonium is toxic if ingested, but exposure to plutonium is not instantaneously lethal. It is plutonium's vulnerability to theft or diversion which imparts the real urgency to provide permanent security for plutonium.

There are three proposals for U.S. plutonium which seek to establish the future use of plutonium stocks not currently deployed in our vast arsenal of nuclear missiles. Savannah River Site (SRS) on Georgia's border is included in every plutonium scenario.

## OPTION #1: PLUTONIUM IMMOBILIZATION

Plutonium immobilization is the option advocated by environmentalists. In plutonium immobilization, nuclear waste originally generated in manufacturing plutonium would be used as a "high-radioactivity" barrier to protect plutonium from theft or use in weapons.

At the end of the Cold War — the U.S. and Russia both faced the huge environmental fallout of decades of nuclear waste from the arms race. SRS, for instance, has 35,000,000 gallons of high-level waste — industrial solvents contaminated with extremely hot radioactive elements. The high-level waste is the result of melting nuclear fuel rods, in which the uranium was fissioned into plutonium, in order to extract the plutonium for atom bombs. The high-level waste tanks at SRS were not designed for permanent storage and are beginning to leak and threaten the most significant freshwater aquifer in North America. A factory has been built to convert the highly radioactive liquid waste into solid glass logs. These high-level waste logs are still lethally hot, but immo-



**GANE WAITS FOR PLUTONIUM** *In April 2005, GANE organized the Plutonium Beach Watch Action Camp on Sullivan's Island, SC. Activists from GANE, Greenpeace, Charleston Peace, Carolina Peace Resource Center, Nuclear Information Resource Service, and Aiken Peace maintained a 24-hour watch for 11 days to expose inadequate security for 300 pounds of U.S. weapons-grade plutonium being shipped through Charleston Harbor. The plutonium arrived from France where it was made into*

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# WAITS

bilize the waste so it no longer threatens to migrate into water supplies. Plutonium may be mixed with the hot waste in the glass-making process which would immobilize it from entering the environment while placing a deadly high-radiation barrier to protect the plutonium from theft or future use as nuclear weapons.

Understandably, the nuclear industry which made such strenuous efforts to manufacture plutonium in the first place has a deep resistance to categorizing plutonium as a waste and treating it as such. Nevertheless, plutonium immobilization in waste is a noble concept and is the best disposition track for nearly 10 tons of "orphan" plutonium not suitable for use as reactor fuel or nuclear weapons already stranded at SRS near Augusta, GA. Environmentalists see plutonium immobilization as "win-win-win" because it will stabilize dangerous nuclear waste while securing deadly plutonium from the environment and from use as weapons. Plutonium immobilization is a humanitarian mission which will utilize the experienced workforce at SRS.

## OPTION #2: PLUTONIUM MOX FUEL

In 1996, the U.S. entered into an agreement with Russia to "dispose" of a sizeable amount of surplus plutonium by remanufacturing it into an experimental type of reactor fuel and using it in reactors where a high-radiation matrix would be created around the low-activity weapons plutonium. SRS was selected as the U.S. site to manufacture the fuel. GANE has sustained a legal challenge to the MOX factory since 2001 and the factory remains stalled in controversy. *See story p. 7.*

Environmentalists oppose MOX for several reasons. First, the plutonium must be dissolved in industrial solvents to "purify" it before it can be made into MOX. This process would create a significant amount of hazardous industrial solvents contaminated with dangerous radioactive elements which would worsen the Cold War nuclear waste hangover at SRS.

Second, MOX is much more expensive than plutonium immobilization. Third, the plutonium must be ground back in to a

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## HALF LIFE LIVING WITH THE EFFECTS OF NUCLEAR WASTE



*Robert Knoth, 2000, silver gelatin print*

*The caption on this grim confrontation with the effects of plutonium processing on human life: "The museum of embryology has a morbid-looking collection of embryos and fetuses, life that never came into being."*

WHEN THE G-8 SUMMIT MET under heavy guard on Georgia's toney Sea Island in the summer of 2004, Greenpeace and GANE brought a powerful photo exhibit to Savannah to highlight the dangers of plutonium processing.

Photographer Robert Knoth's images create a haunting record of the health and social effects of plutonium processing on the people who live near the notorious Russian plutonium facility Mayak. After five decades of environmental devastation from Russia's primary nuclear weapons factory, Mayak is currently proposed to be the site of a new plutonium MOX fuel factory.

*Half Life* was also exhibited in Bluffton, SC, and South Carolina State University at Orangeburg. The provocative exhibit became a forum for public education and discussion about a similar plutonium processing facility in the United States, Savannah River Site. SRS is where the U.S. plutonium MOX fuel factory is proposed to be built.

The G-8 Summit's trend for the last several years has been to ignore the plutonium and MOX issue. Without G-8 support and funding for the Russian MOX program, the MOX program remains stalled in both the U.S. and in Russia.



*photo by Jennifer Turner*

*test MOX fuel for Duke Power's Catawba nuclear plant in Rock Hill, SC, near Charlotte. We witnessed the ship sneak into the harbor with its lights off after sunset on April 11. Eight hours later we took to the highway and tracked the three-truck plutonium convoy to Savannah River Site. The plutonium had to go to SRS because Duke failed to meet plutonium security requirements at Catawba. Jennifer Turner wields a camera as Glenn Carroll drives with the convoy. Good thing we weren't the bad guys!*

## THIS WORLD OVER

Ah well, that's this world over  
Ah well, next one begins

Will you smile like any mother  
As you bathe your brand new twins?  
Will you sing about the missiles  
As you bathe odd numbered limbs?

Ah well, that's this world over  
Ah well, next one begins  
Ah well, that's this world over  
You sadly grin

Will you tell them about that far off and mythical  
land  
About their leader with the famous face?  
Will you tell them that the reason nothing ever  
grows  
In the garden anymore  
Because he wanted to win the craziest race  
That's this world over

Will you smile like any father  
With your children on a Sunday hike?  
When you get to a sea of rubble  
And they ask what was London like?

You tell them ah well, that's this world over

Will you tell them about that far off and mythical  
land  
And how a child to the virgin came  
Will you tell them that the reason we murdered  
Everything upon the surface of the world  
So we can stand right up and say we did it in His  
name?

That's this world over  
Or so it seems  
That's this world over  
The end of dreams

That's this world over, over over and out

This World Over

— **ANDY PARTRIDGE**

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# PLUTONIUM WAITS

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powder which is its most toxic form and the form in which it can have a criticality accident and explode; be released and dispersed in the environment; undergo spontaneous combustion; and/or enter the lungs of plutonium workers and cause cancer.

And, in the final analysis, handling such a huge quantity of weapons-grade plutonium through several stages of processing, storage and transport as fresh "low-activity" fuel increases its vulnerability to theft and diversion — the exact opposite of the program's stated mission to provide plutonium security!

The new experimental MOX fuel would be extremely volatile demanding the highest skill from nuclear operators to prevent accidents. Catawba and McGuire, the Duke Power reactors selected for the MOX program, are all near Charlotte, NC, a major population center. The MOX reactors are of a peculiar design which has little more than one-half as thick containment as other reactor types. This particular "ice condenser" reactor design was abandoned after a small number were built because it failed to work as designed. Studies predict 25% to 50% more fatalities from a reactor accident involving MOX fuel, and the reactors chosen for MOX are unfortunately the least safe type.

## NIXMOX

### OPTION #3: PLUTONIUM PITS *More Atom Bombs?!*

The third prospect for surplus plutonium stocks defies reason — make a Modern Pit Facility to make more atom bombs!

The reasons why the U.S., and the world, do not need more atom bombs seem obvious, especially in the U.S., the most heavily armed nation on Earth. And yet, the public has been asked twice to attend public meetings and voice reasons for and against more nuclear weapons.

Nuclear weapons designers voiced concerns that weapons in the arsenal containing 50-year-old plutonium might have "only" the destructive power of 40 or 50 Hiroshima bombs.

SRS workers voiced the desire for jobs to prevent layoffs at the factory complex.

Environmentalists and peace activists talked about jobs for environmental cleanup, plutonium immobilization, and developing nuclear waste management as a national security priority and regional technology export.

You wrote postcards and letters and gave testimony of your understanding that atom bombs destroy the environment both in their manufacture and in their use.

And Congress has, as of this moment, postponed funding to pursue a Modern Pit Facility!

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IMMOBILIZATION? MOX? BOMBS?  
While the people debate, plutonium waits.

*Glenn Carroll is coordinator of GANE and GANE's legal challenge to MOX.*

## TAKE ACTION ON PLUTONIUM

**Plutonium waits — but YOU don't have to wait —  
help shape plutonium's destiny!**

Congressman David Hobson controls the purse strings on  
which plutonium projects receive funding.  
Help set plutonium funding priorities by writing or calling:

The Honorable David Hobson  
U.S. House of Representatives  
Chairman, Energy & Water Development Subcommittee  
2346 Rayburn Building  
Washington, D.C. 20515

202-225-4324 FAX: 202-225-1984

<http://www.house.gov/hobson/formmail.htm>