

# **Environmental Defense Institute**

## **News on Environmental Health and Safety Issues**

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### **EDI Calls for Closure of Advanced Test Reactor**

A report prepared by the Environmental Defense Institute entitled "Unacceptable Risks at the Idaho National Laboratory Advanced Test Reactor, The Case for Closure" details significant and ongoing violations of federal statutes, laws and regulations at the Idaho National Laboratory. The report is based on documents obtained from DOE Idaho Operations Office (DOE/ID) using the Freedom of Information Act (FOIA) and other state and federal agency published reports related to the Advanced Test Reactor operations.

The forty-year-old Advanced Test Reactor (ATR) poses an immediate threat to populations living in southeastern Idaho and western Wyoming because radiation released during a major accident would be nearly half that released from Chernobyl. This imminent (but preventable) threat warrants investigation by state and federal regulatory agencies. [see the report at; <http://environmental-defense-institute.org/publications>]

The Environmental Defense Institute, Keep Yellowstone Nuclear Free, and David B. McCoy filed a formal petition in April with the U.S. Environmental Protection Agency Office of Inspector General to conduct an in-depth investigation of the Advanced Test Reactor (ATR) operations.

Recent disasters such as Hurricane Katrina and the recent Sago Mine explosion in West Virginia reveal a clear lack of federal response before and after such disasters to prevent and mitigate these disasters. Taking note of concerns and information which existed prior to these disasters was a key ingredient missing in the timely preparation for or prevention of calamitous results from such catastrophic incidents.

It is EDI's contention that the DOE which operates the ATR at the Idaho National Laboratory (INL) is currently hiding, ignoring and discounting information regarding serious safety issues in the operation of the ATR. The DOE plans to use the ATR for the ultra-hazardous project of Plutonium 238 production. Pu-238 is a carcinogenic, mutagenic substance of enormous toxicity which has contaminated the workers and public in every community in which DOE has produced Pu-238.

The ATR has an enormous inventory of releasable radioactive material, equal to nearly half that of the Chernobyl reactor, which can be released during an accident.

The ATR has no containment dome that would protect the public and environment from the release of radiation during a catastrophic accident. Containment domes such as that at which existed at Three Mile Island Nuclear Reactor are standard protective devices at all commercially operating nuclear reactors in the United States. Lack of containment for the ATR is so basic to public and environmental safety that the public can only view DOE as operating a deliberate menace to the community and environment.

The ATR has not been seismically qualified to operate in a region that is regarded as seismically active as San Francisco. The ATR was only designed to the Building Code that existed in 1961. The DOE refuses to provide the seismic soil spectra report of year 2000 for the ATR claiming national security exemption.

The ATR has seismic support anchor bolts that DOE knows cannot reach through their anchor plates to be anchored in the concrete under the supports.

The ATR lacks an Emergency Core Cooling System (ECCS) that could reliably perform during an earthquake. The ECCS piping is linked to a fire suppression system, the Emergency Fire Injection System, which passes through seismically unqualified masonry buildings, any one

of which could collapse during a seismic event and truncate the piping and water supply for the ECCS.

The Emergency Firewater Injection System, that is the backup for the ATR Primary Coolant System, is a half-century old system and has yet to be upgraded.

The water supply for the emergency firewater system relies on an antiquated pumping system that has repeatedly failed sequential testing. The water holding tanks for the ATR built in the 1950s are not seismically qualified by current standards.

Only one emergency backup diesel power generator exists for the water pumps and the ATR reactor shutdown system. This pump is not adequately secured for seismic events. The electrical connections of the diesel generator are not seismically protected.

Failure of the ECCS could result in a hydrogen or steam explosion which would spread 175 million curies of radiation to the environment. This is an amount of radiation equal to nearly half the Chernobyl release which contaminated thousands of square miles and spread a cloud of radiation around the earth.

The ATR operations have resulted in ongoing contamination of the air, water and soil at INL in an area which overlies the sole source aquifer of the Snake River System. The contamination includes noble gasses, iodines, heavy metals and radioactive products. The releases of the ATR lie within the flood plain of the Big Lost River.

DOE has no Clean Water Act National Pollution Discharge Elimination System (NPDES ) permit for the INL. DOE has a INL Title V air permit as required by the Clean Air Act; however, it is inadequate because it does not account for all hazardous air pollutants from each of the INL operations that exceed emission standards.

The ATR facility and other facilities which support it in the Test Reactor Area (TRA) now called the Reactor Technology Complex (RTC) area produce mixed hazardous/radioactive wastes which are of the type and quantity of hazardous wastes required to be regulated under the Resource Conservation and Recovery Act (RCRA). For example, DOE contaminated the soil at INL with six beryllium reflector blocks from the ATR. The blocks contained a total of 293,000 Curies of tritiated hydrogen gas and approximately 20 Curies of carbon-14. Both radionuclides form mobile compounds and represent a threat to the Snake River aquifer over the next three hundred years. The beryllium reflectors sustain considerable radiation deterioration, so at each reactor fuel change-out, the damaged blocks are replaced. Beryllium is a RCRA waste. Yet the ATR and facilities of the TRA\RTC do not have the Part A and Part B permits which are mandated for such facilities by RCRA. Thus the ATR and facilities of the TRA\RTC are illegally operating federal facilities. DOE has assiduously avoided addressing the RCRA issues which exist for the ATR and TRA\RTC facilities.

DOE violates its own internal safety orders in operation of the ATR. DOE is the fox watching the nuclear henhouse and has no duty enforceable by the public to obey its safety orders.

DOE has deliberately attempted to conceal the problems of the ATR from the public by delaying release of documents, redacting large portions of documents and fails to provide full safety reports without requiring full blown FOIA requests. FOIA exemptions are used by DOE as a tool of delay and interference with the public right to know about dangerous facilities operating in our community. Reports with Un-reviewed Safety Questions are kept from the public.

The ATR safety culture of the DOE at the ATR has been to silence or terminate critics or whistleblowers from their jobs and conceal facts from the public rather than to address long standing problems and resolve those problems in a timely manner. The deficient safety culture at the ATR is underscored by the decade old existence of systemic problems which although repeatedly cited in occasional independent safety reports are not corrected year after year. Seismic concerns for ATR date back numerous decades but have not been corrected.

The DOE published a draft Environmental Impact Statement for Plutonium Consolidation which failed to tell the public about any of the safety concerns for the ATR documented by numerous studies. DOE misinforms by omitting to the public by withholding information and also by not furnishing or addressing negative information which it holds. The DOE has offered a sham Environmental Impact Statement to the public.

The ARES November 29, 2004 "letter report" to DOE documents that all of the major systems for seismic protection of the ATR are vulnerable to seismic stress. The inadequate systems include primary and secondary cooling systems and the emergency firewater injection system.

The Facility Certification Report No. 29 by Battelle Energy Alliance catalogues equipment failures and malfunctions due to age of the ATR and unavailability of replacement parts. The 2004 Reactor Technology Complex Natural Phenomena Hazards Assessment Plan which assessed seismic hazards at RTC never was implemented.

Our concerns flow from information which has been obtained from the DOE itself through Freedom of Information Requests, statements by ATR safety analysts, ATR engineers, and independent reviews by the Defense Nuclear Facilities Safety Board and DOE Office of Independent Oversight and Performance Assurance (OA).

Despite an enormous inventory of radiation that could be released in a design basis accident, the DOE apparently believes that the safety of ATR operations in Idaho deserve no more care than one of the minimally regulated research reactors in a university.

It is our contention that the continued operation of the ATR has the potential to result in a catastrophic accident for which there exists inadequate protection for the workers, public and environment. We submit that the appropriate course of action to prevent a catastrophic accident at the ATR is to cease operations of the ATR and to shutdown and decommission this inherently unsafe nuclear reactor. DOE, on the other hand, is touting the ATR as the "world's premier test reactor."

In Summary: The current operation of the ATR by the DOE constitutes serious and illegal environmental pollution. The ATR operations have all the ingredients for creating a nuclear disaster with deaths, injuries and national psychic trauma and tragedy that could equal or exceed the destruction of the World Trade Center, the bombing of the Oklahoma Murrah Federal Building or Hurricane Katrina. DOE operates the ATR at great peril to Idaho and all downwind residents. Any disaster which may occur as a result of ATR operations will be seen to have been entirely preventable except for the failure of the DOE and US government officials and the State of Idaho to heed the obvious warning signs abundantly present.

The DOE continues to operate ATR with full knowledge that:

- DOE is not being honest about the risks for potential accidents from unsafe ATR operations;
- DOE hides information from the public by censoring Freedom of Information Act requests and making unavailable reports such as Un-reviewed Safety Questions;
- Safety analyses are inadequate;
- Seismic safety analysis and protection in the event of earthquakes are wholly inadequate;
- DOE flaunts federal law in operating the ATR. The ATR lacks the federal permits for operation under the Clean Water Act, Resource Conservation and Recovery Act, and the Clean Air Act;
- DOE is not in compliance with its own Orders for operations and safety at ATR;
- The ATR operations have dumped millions of gallons of contaminants in the Snake River Aquifer and continue to do so;

- The ATR operations continue to annually pollute the respiratory environment with thousands of curies of radiation risking the health of children, the community and its workers;
- Containment in the event of a major nuclear accident is non-existent;
- The equipment of the ATR is antiquated and replacements are difficult or impossible to obtain;
- There is lack of an adequate safety culture at ATR;
- There is lack of adequate funding to safely operate ATR.

## **Chernobyl Plus 20**

### **by Steve Osborn**

Chernobyl, a disaster almost old enough to vote. It seems a lifetime ago to the young. Just yesterday to those of us who remember Hiroshima, Nagasaki, Operation Crossroads at Bikini. Chernobyl was a prediction by those who knew; By those who had seen their bones through their arms, bathed in thermonuclear light in the Marshall Islands and by the Victims of Castle Bravo in '54.

Chernobyl was preceded by many close calls, many accidents. The Fermi plant near Chicago, Three Mile Island and others, radiation poisoning suffered by countless "Downwinders." Here and abroad they cried their warnings. Chernobyl was not a nuclear explosion, not a bomb. It was just an accident, a stubborn fire in nuclear fuel. Yet the effects were felt, are still felt, around the world. They will continue for many generations. Chernobyl, a city, a region, rendered uninhabitable for three to six centuries, longer than the Dark Ages lasted. A legacy of cancers and mutations, not two heads or three legs, but susceptibilities for diseases and mental retardation.

Chernobyl, a warning unheeded by those who never felt the heat, saw the light, feared the sickness, But blithely want to curse the planet with more of the same. In the sacred name of Democracy? Chernobyl is *our* future, unless we reinstate the many treaties, the world worked so hard to create, building hope out of fear. And remove from power, those who would reawaken the nuclear dragon, and turn it loose to devour the earth again.

See Osborn's page on Atomic Veterans site.

<http://www.aracnet.com/~pdxavets/osborn.htm>

## **Fallout from Chernobyl Will Cause 100,000 Deaths Says**

### **Greenpeace**

**By Andrew Osborn**

The fallout from Chernobyl, the world's worst nuclear accident, will be 10 times more deadly than previously thought and will cause almost 100,000 people to die from cancer in coming years, Greenpeace says.

Twenty years after Chernobyl's fourth reactor exploded, sending a radiation-lined cloud into the atmosphere, the green, anti-nuclear campaign group alleged that the human consequences of the disaster have been woefully and deliberately underestimated.

It accused the pro-nuclear lobby of systematically trying to play down the scale of the tragedy for cynical public relations purposes. As the 20th anniversary of the accident looms, the truth about how many people have fallen ill or died as a result of the radiation leak has become the subject of a fierce debate between those who support nuclear power and those who don't. It is

not an idle academic debate - establishing how serious Chernobyl really was has taken on cardinal political importance as the UK and continental Europe consider commissioning a new generation of nuclear reactors to compensate for dwindling oil and gas stocks.

With its new report Greenpeace became the latest interest group to enter the fray. It cited demographic data which showed that some 200,000 people appear to have already died in Ukraine, Belarus and Russia, the area most heavily contaminated, as a direct result of the 1986 Soviet-era accident. The total number of directly attributable cancer cases in that region was set to soar to 270,000, it added, of which 93,000 would be fatal.

Greenpeace said its findings proved that nuclear energy was too dangerous and should be shelved. "Each one of these statistics has a face," it noted grimly. The accident occurred when an unnecessary experiment to test the reactor's performance went badly wrong and it exploded. Greenpeace said it was a lesson the world should not forget.

"The [emissions] from this one reactor exceeded the radioactive contamination by the nuclear weapons used at Hiroshima and Nagasaki by one hundred times. It has become clear that one nuclear reactor can contaminate half the Earth."

The group's findings sharply contradicted those in a report compiled by various United Nations agencies (including the International Atomic Energy Agency) and the World Bank released in September. It claimed the disaster would ultimately claim the lives of between 4,000 and 9,000 people and said that, although serious, its impact had been vastly exaggerated.

It said that fewer than 50 deaths could be directly attributable to the accident so far, that people who contract thyroid cancer have a 99 per cent survival rate, and that many of those who have died in the contaminated area (which has a population of about five million) were killed by lifestyle diseases caused by drinking and smoking.

Controversially, it spoke of "persistent myths and misperceptions about the threat of radiation". Dr Michael Repacholi, the coordinator of the WHO's radiation and environmental health unit, said: "The health effects of the accident were potentially horrific, but when you add them up using validated conclusions from good science, the public health effects were not nearly as substantial as had at first been feared."

Vladimir Chuprov of Greenpeace Russia said yesterday that the pro-nuclear lobby had hijacked the UN's report to "whitewash" the truth about Chernobyl. That, he said, was why Greenpeace needed to issue its own report compiled by 52 scientists.

Establishing how serious Chernobyl has been made harder by the fact that the 18-mile exclusion zone around the reactor in modern-day Ukraine has become a vibrant unplanned nature reserve, prompting some to say that the accident does not seem to have been as bad as first thought.

**Andrew Osborn writes in the UK for the *Independent News and Media Limited*.**

## **Nevada Test Site Reopens in June**

Ryann Rasmussen reports in the *Utah Sun Journal* (4/27/06), "The U.S. Department of Energy will detonate a 700-ton non-nuclear bomb on June 2 at the Nevada Test Site, but some Iron County residents and officials are concerned. They are afraid the expected 10,000-foot debris cloud will have a negative effect on public health.

"Pat Keehley, assistant professor of political science, said the debris from the Divine Strake test bomb could yield radioactive material that has settled from nuclear testing in the 1950s. She said Cedar City residents should be aware of the possible problems the test could create. 'Exploding a non-nuclear bomb could lead to more biological problems for southern

Utah,' she said, an important political issue that we should closely monitor.

"Janet Seegmiller, associate professor of library science, has conducted research on the effects of nuclear testing in southern Utah. She said although the bomb is not nuclear, it could lead to nuclear testing in the future. 'The fear is that this is the beginning of above-ground testing,' she said.

"Keehley said the DOE might justify non-nuclear testing because it is safe and it will not affect the American public. 'The current administration could be assuming that this test will be safe and go relatively unnoticed, thereby paving the way for nuclear testing,' she said. 'The public may not closely track nuclear tests if non-nuclear tests precede them.'

"During the 1950s nuclear tests were conducted on Frenchman's Flat which is now known as the Nevada Test Site, Seegmiller said. The testing produced radioactive material that fell on Iron County and the surrounding areas and continued to spread across the U.S.

"Later, people in Iron County developed Leukemia and 20,000 sheep on the Nevada desert died, Seegmiller said. Some people who develop cancer today believe its a result of the nuclear testing that occurred more than 50 years ago.

"People who suffer health problems as a result of the radioactive cloud are referred to as Downwinders, Seegmiller said. Some Downwinders believe that the Divine Strake test is a precursor to nuclear tests that could lead to more health problems.

"Cedar City Mayor Gerald R. Sherratt said some people are concerned that some of the debris from the test will reach Cedar City. This sends things into the air and that's a concern, he said. Some (debris) might reach our city if the wind blows the right way. Its not an atomic blast, but its a big one. Sherratt said all Utah congressmen and congresswomen have voiced their opinions on the planned test. I think our congressmen have been on top of this, he said.

"Keehley said citizens and politicians in Nevada and southern Utah vehemently oppose nuclear tests. Chris Covington, a sophomore English major from Gunnison, said he is worried about the cloud the test will produce. The dust is going to go everywhere, he said.

"Covington said he doesn't understand why the U.S. has a nuclear program when other international nuclear programs have been discouraged. How can we have a nuclear program when we actively discourage (other countries) nuclear programs? he said."

### **Fallout Predicted**

Preston Truman, who heads the Downwinders group adds, "Depending on exactly where this conventional bomb is being tested, and above what tunnel complex significant existing contaminates from previous nuclear tests (including highly radioactive/ toxic plutonium, cesium, strontium and iodine) could be blown into the air. Truman raised holy hell all during the 1980's over the Rainer Mesa and accidents and vents from its tunnel complex, and there were a lot of previous underground nuclear bomb test vents to the atmosphere. DOE is likely going to test this right over top of those 'problems.' They also built in Rainer -- another part of the tunnel complex -- their 'reusable facility', which was designed to take low yield weapons effects tests up to near a kiloton and turn around and wash it down and reuse in a month or so. That is where DOE does almost all the sub-critical tests, and it would of course be used when they start testing again."

## **Baby Tooth Survey of Nuclear Fallout Effects**

Patrice St. Germain reports in *The Spectrum* (4/17/06), "During the era of nuclear testing in the Nevada desert at the Nevada Test Site, there was an air of secrecy surrounding the tests although those in the path of the clouds carrying radioactive particles were reassured by the government that they were safe.

"Because of the veils of secrecy - especially when questioned about the health of children - a group consisting of scientists, physicians and citizens from church groups and civic

organizations initiated what was called the Baby Tooth Survey in 1958.

"The goal was to develop a data bank on the changing levels of strontium 90 in the milk supply by measuring its presence in baby teeth. Families were encouraged to save teeth as they fell out and to donate them for analysis. Over a five-year period 250,000 teeth were collected from children who 'gave their teeth to science' rather than to the 'tooth fairy.'

"While residents in St. George were subjected to fall-out during the testing, the test's primary concentration was in St. Louis, Mo., an area which was considered a 'hot spot' - high in levels of radioactive fallout. Dr. Charles Weiner, Professor of History of Science at MIT, the Massachusetts Institute of Technology, presented a talk Thursday evening in Springdale, sponsored by Z-Arts!, about the program.

"The first official results of the test done by the Committee for Nuclear Information in November 1961 showed - based on an analysis of children born from July 51 from December 1954 whose mothers lived in St. Louis while they were pregnant - a direct linear increase in strontium 90.

"Weiner said people enthusiastically participated in the program, as notes sent in with the teeth showed. 'One note that was sent in read 'Dear Fairy, I would like to have a dime but do not take my tooth. I am going to send it to siense (sic),' Weiner said. Another note came in from a mother that said 'I pulled the tooth with a pair of pliers before it became loose in a burst of scientific enthusiasm.' In return, the children received a note with a button that stated 'I gave my tooth to science.'

"The Baby Tooth Survey followed testing done on cadaver thigh bones measuring the amount of atmospheric fallout. The British Atomic Authority admitted in 2001 that it removed the thigh bones from 3,400 infants to be tested without their parent's authority.

"In addition to the Baby Tooth Survey testing for strontium 90, other testing detected Iodine 131, which affected the thyroid of small children who drank a lot of milk and developed thyroid problems.

### **Help for downwinders**

"The above-ground nuclear test Dirty Harry was appropriately named since, as Weiner stated, it was really dirty, dropping much more fallout than anticipated due to atmospheric conditions. While some scientists and the government said during and after testing that "no harm was done," programs such as RESEP, Radiation Exposure Screening Education Program, and RECA, the Radiation Exposure Compensation Act, speak otherwise.

"To date, 15,261 claims have been approved by RECA with 9,707 of those approved as downwinders, for a total of \$485,320,000. The downwinder clinic, located at the 400 East campus of Dixie Regional Medical Center, has been open for two years. DRMC public relations director Terri Draper said the clinic has had more than 1,400 patient visitors and last year, 64 cancers were discovered that did not have any other precancerous indications.

"'We feel like this has been worthwhile,' Draper said. 'If you can diagnose 64 people who had concern and are totally not aware of it, that's a success.' The purpose of the RESEP clinics is for the education and medical screenings of "downwinders." An estimated 40,000 area residents who fit that designation were exposed to radiation from above-ground nuclear testing at the Nevada Test Site from 1951 to 1958 and during the month of July in 1962. Draper said the clinic will continue to operate as long as the federal government, which is funding the clinic, views it as worthwhile."

## Chernobyl Twenty Years On

by Andrew Osborn, Geoffrey Lean and  
Severin Carrell

**Twenty years ago, an unparalleled nuclear disaster struck. Its effects are still felt across Europe. As the West seeks to revive the technology, the anniversary sends a chill warning**

She is known as "Maria of Chernobyl" and - though she is not a saint - many view her birth in the shadow of the infamous reactor as little short of miraculous. Now aged six, Maria Vedernikova is the first and only child to be born in Chernobyl's post-catastrophe dead zone, a bleak and frightening area 18 miles in radius, now in Ukraine. Indeed, if you ask a guide at Chernobyl whether anyone has been born in the zone since 20 years ago this Wednesday, when the reactor exploded, you will get an emphatic "net".

Officially nobody is allowed to live here and the several hundred masochistic souls who insist on doing so are here illegally. The soil is poisoned with caesium and strontium. Only temporary workers and catastrophe tourists are allowed to enter for short periods at their own risk. And "the zone" is associated in most people's minds with only one thing: death.

Yet Maria's parents - canteen worker Lida Savenko and clean-up worker Mikhail Vedernikov - insist that she did indeed take her first breaths here, in a ramshackle peasant's cottage in Chernobyl village. Maria's upbringing has been unconventional; her food is checked with a Geiger counter and her home is regularly tested for radiation. She swims in a "nuclear" river and has no other children to play with.

Since she has started going to school outside the zone, she has begun to lead a more normal life. So far she has shown no signs of being affected by radiation and appears healthy. Long may she continue to be so. For the toll of the catastrophe that erupted at four seconds past 1.23am on 26 April 1986 has spread all over the surrounding area - and nearly half of Europe.

More than 200 times as much radioactivity was released as by the Hiroshima and Nagasaki bombs. The reactor's operators switched off all its safety systems while trying to carry out an officially authorised, but dangerous, experiment.

Suddenly, as the official investigator of the accident put it, the reactor "was free to do as it wished". Its power surged to several hundred times its normal level in the very last second of its life, and a massive explosion blew its 1,000-ton lid clean off, blasting highly radioactive material more than 7km up into the atmosphere. Its core then caught fire, pouring out yet more radioactivity.

The toll on health and lives was determined by a mixture of happenstance and freak weather conditions, which spared the immediate area an even greater catastrophe - but spread its effects out over the continent. First, the accident took place at night so there were just hundreds, not the usual thousands, of people on duty at the plant. More important, the people of the area were asleep indoors: their homes shielded them from 90 per cent of the radiation.

Then, the very fierceness of the fire sent the radioactive emissions high into the air, as if contained in an invisible chimney. It was a still night, and so the radioactive plume was able to rise steadily until it reached about 1km up where a high, gentle south-easterly breeze wafted it over some relatively uninhabited marshes. Most fortunate of all, it did not rain for days afterwards. This would have brought down radioactive materials with it. Instead, the longer they stayed up in the air the more the most virulent, short-lived ones decayed.

The first result of this was that only 28 people died in the accident and its immediate aftermath- and they were all people at the reactor site at the time, or when fighting the blaze (another 19 of them have died from their exposures since). This is extraordinarily few: studies

suggest that thousands would have died if conditions had been different. The second result is that the radioactivity spread far and wide. Indeed the accident first became known the following afternoon when radiation monitors in Sweden - set up to check compliance with the 1963 test ban treaty - detected high levels of radioactivity crossing its borders.

For days the Chernobyl cloud wandered over Europe, blown by varying winds, and shedding some of its radioactive cargo whenever it rained. It reached Britain on 2 May. European Union measurements show that, in all, 40 per cent of the continent was contaminated. Areas with particularly high fallout - apart from Russia, Belarus and Ukraine, all near the plant in what was then the Soviet Union - include Austria, Slovenia, northern Greece, southern Finland, parts of Norway and Sweden, Cumbria, north Wales and parts of Scotland. Even now some 375 sheep farms in Cumbria and Wales suffer restrictions on marketing their meat because their pastures are so radioactive. There are similar restrictions on reindeer in Sweden and Finland and on wild boar and mushrooms, berries and some fish across much of Europe.

Unexpectedly high levels of thyroid cancer, in people who were children at the time of the accident, have emerged in Russia, Belarus and Ukraine. And as we report today, rates of the same rare cancer in children have risen twelve-fold in Cumbria.

Nobody knows what the final toll from Chernobyl will be - not least because the solid cancers that will be some of its main effects take decades to develop, while genetic damage will take generations to show. Last year the International Atomic Energy Agency predicted 4,000 deaths, but this has been widely discredited as too low. Equally, a Greenpeace estimate of 100,000 deaths published last week seems overblown. The best estimates range between 16,000 deaths (the International Agency for Research on Cancer, on Thursday) and 60,000, most outside the old, USSR.

The effect on nuclear power was more immediate - applying the coup de grace to an already failing industry across much of the world - but may now be fading as Tony Blair, George Bush and other leaders try to revive the technology. But it still carries a warning, At the time Dr Pierre Tanguy, a leader of the aggressive French nuclear industry, confessed that the catastrophe was caused by "the kind of operator error that we all experience in our plants, and is hard to eliminate".

Back in Chernobyl another disaster may be brewing. For the vast concrete "sarcophagus" shielding the shattered reactor is listing to one side, cracking and in danger of collapsing. But Maria of Chernobyl is, illegally, staying put. "This child will regenerate our land", insists her mother. "We won't let her be taken away from here."

Natalia Manzurova, a radiation expert ,spent four and a half years clearing up Chernobyl and the nearby town of Pripiat. She has written a vivid memoir of her experiences. Here extracts are published for the first time. When I arrived, Pripiat was a city of abandoned, sometimes looted, multi-storeyed apartment houses, public squares, buildings, athletic complexes and stores, greeting us with a stench leaking from refrigerators that had not been turned on for over a year. Mice were everywhere. Sometimes I wept at the things I saw: children's beds and their toys and living room floors covered with photographs of people's smiling faces which I could never ignore, or bring myself to walk on.

Photos in the kindergarten saddened me immensely and I hoped some miracle had spared their young owners. In one of its rooms I found a cage with the prickly skin of a hedgehog as wrinkled as an empty plastic bag. A second cage held bird feathers, the bodies likely eaten by mice.

A sick dog lay in a child's bed in one of the napping rooms. It was the only bed that looked used so perhaps the child that slept there had befriended her. She crawled towards me with difficulty. She had no hair on her paws and lower legs, her flesh was bleeding, her eyes clouded and saliva streamed from her mouth. She had external beta radiation burns from hunting in contaminated grass. I went to an abandoned hospital to find a container we could use for

water samples. I found a suitable large farm milk can, but inside it was the saddest thing imaginable - four, six or eight months old chocolate-colored 'mummified' newborns with closed eyes and bowed arms and legs.

*Andrew Osborn, Geoffrey Lean and Severin Carrell report for the UK Independent News and Media Limited.*

## **Hanford Waste Lethal And Leaking**

CBS 60 Minutes reports 4/27/06; "The most contaminated piece of real estate in the Western Hemisphere is a site along the Columbia River in Hanford, Wash. The Department of Energy has been trying to clean up millions of gallons of highly radioactive nuclear waste stored there for 16 years — and has accomplished virtually nothing, says the state's governor.

"Gov. Christine Gregoire says the waste poses a threat to the river and potentially to the people of the Pacific Northwest. Lesley Stahl's report, which cites documents attesting to systemic problems in the Energy Department's oversight of the project, will be broadcast this Sunday, April 30 at 7 p.m. ET/PT.

"There are 53 million gallons of the waste, byproducts of the Cold War, buried in old underground tanks that have already leaked 1 million gallons into the ground, some of it heading right for the Columbia River. The waste is so lethal that just a cupful of it could kill everyone in a crowded restaurant, in minutes.

"Gregoire says the cleanup is more urgent than ever. 'The chances of a catastrophic event over there are real. Time is not on our side. We need to get going,' she says.

"One of the possible scenarios that worries Gregoire is a severe earthquake. Among the energy Department's mistakes was miscalculating how strong some of the buildings designed to process the waste needed to be to withstand an earthquake. 'In a building like this, you need to build it to ensure that it withstands whatever an earthquake may pose — if there is one, because we absolutely do not want a breach of this radioactive material in the atmosphere,' says Gene Aloise of the Government Accountability Office, Congress's investigative arm. Despite warnings as early as 2002 from an outside safety board that the design criteria were not stringent enough, the D.O.E. continued construction until 2005.

"It turns out the outside safety board was correct and that thousands of designs will have to be re-engineered to ensure the buildings will be up to snuff. The extra cost to taxpayers? At least \$800 million — plus a delay of as much as four years in the plant's start date. The Energy Department acknowledges that 'mistakes were made,' but vows that it is capable of handling the mammoth project.

"However, Tom Carpenter of the Government Accountability Project (GAP), a private watchdog group, is not so sure. He provided 60 Minutes with internal documents from the Energy Department and from the project's contractor, Bechtel, revealing what he calls a serious lack of oversight in ensuring that critical vessels used to dispose of the waste are built correctly. One tank was already installed before all of its deficiencies were discovered and fixed.

"The design flaws that led to this tank being deficient applied to 66 other vessels,' Carpenter says. 'And it really raises a big question about, well, 'What have they not caught out there? What other equipment or tools, or machines, is installed, maybe under feet of concrete, that [Energy Department] programs failed to catch?' asks Carpenter.

"Charlie Anderson of Department of Energy says 'I would agree that there are big mistakes here — that we are taking control of and we're correcting.

GAP has released several documents that expose gross managerial wrongdoing and

incompetence at the Hanford Waste Treatment Plant (WTP) in Washington state. The documents, made public during the 60 Minutes broadcast and in the Seattle Times, indicate that the Department of Energy (DOE) and the contractor in charge of cleanup at the site, Bechtel, have knowingly installed defective equipment that is supposed to contain high-level nuclear waste. These, and numerous other actions, have endangered the citizens of the Pacific Northwest.

The installation of one known defective vessel was the result of Bechtel's rush to receive a \$15 million fee for meeting a deadline, coupled with a complete lack of oversight by DOE. This was only to be followed months later by another DOE payment to Bechtel of \$22 million for Bechtel's use in taking steps to combat its own negligence and incompetence.

Up to 66 other vessels crucial for environmental safety and public health were built using incorrect specifications. GAP is urging for these vessels to be re-inspected to ensure public and worker safety.

Regrettably, this is not the first time that the WTP has come under harsh criticism. When the project originally began, the DOE approved a "fast track" approach to the project. This decision has proven to be a disaster. Equipment installed by Bechtel has consistently failed to meet specifications, causing a serious threat to the safety of the general public. A total lack of foresight has left the WTP site vulnerable to an earthquake. Given the fact that Hanford is close to one of the world's most active fault lines, such poor planning is inexcusable. This mistake alone raised the WTP construction budget from approximately \$6 billion to \$10 billion.

The problems that plague Hanford can be attributed to a tremendous lack of oversight on the project. Bechtel has consistently cut corners because the DOE failed to adequately supervise the ongoing construction of the plant in a manner that ensures citizen safety. While the residents of Washington have been fortunate that Bechtel's substandard work has not caused a catastrophe to this point, future negligence on the part of Bechtel could prove tragic. Therefore, it is imperative that DOE and Bechtel are held accountable for their actions.

Specifically, GAP is again calling for real, independent oversight of the project - namely that the Nuclear Regulatory Commission (NRC) get involved. DOE has been proved incompetent and incapable of handling this massive program. It is time for the NRC, a body well respected and known for heavy and thorough scrutiny of projects dealing with nuclear waste, to have total control of this project.

GAP will continue to advocate for more openness and transparency in the Hanford clean-up effort. We will not allow Bechtel and the DOE to continue to endanger the health and safety of thousands. [For more information see [www.whistleblower.org](http://www.whistleblower.org)]