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Subject: LA Times Article on Hanford

I don't know what prompted the LA Times to do a Hanford piece. But here it is....

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- > RADIOACTIVE WASTE SEEPS TOWARD COLUMBIA RIVER
- > Los Angeles Times
- > Sunday, March 12, 2000
- > by Kim Murphy
- >
- > RICHLAND, Wash.--For five years during the 1960s, researchers at the Hanford Nuclear Reservation took spent fuel from the plant's bomb-making reactors and conducted a series of radiochemistry experiments. Once the work was finished, the fuel--so radioactive it couldn't be handled except by remote control--was buried in three underground trenches.
- > And there it remained, largely forgotten. Until last year, when routine surveys found tritium--known to cause birth defects--at concentrations 90 times the federal drinking water standard in a nearby well. By last month, the level of tritium in the ground water had increased fourfold.
- > The well lies 3 1/2 miles from the Columbia River, the greatest river of the American West, the waterway that irrigates 1 million acres of prime farmland in two states and nurtures 80% of the fall chinook salmon harvested in Alaska and British Columbia. Tests of other wells have shown that the potent tritium seep hasn't moved more than a quarter-mile from the burial site. Still, Hanford officials say that the contamination could reach the river in as little as three years.
- > What's more disturbing is what may follow. Tritium is one of the fastest-moving radionuclides and may merely be the scout. Far more deadly nuclear wastes likely are not far behind.
- > Nowhere has the Cold War's legacy lingered so poisonously as it has
- > at the 560-square-mile Hanford reservation, operated by the federal
- > government for more than 40 years to produce plutonium for nuclear
- > bombs.
- > It is the most contaminated place in North America, with 80% of the
- > spent nuclear fuel in the Department of Energy's inventory--2,100 metric
- > tons in all--stored in a pair of aging basins, some of their fuel
- > canisters crumbling and corroded.
- > Deteriorating underground tanks a few miles away hold 54 million
- > gallons of radioactive soup that over the years has made its way into
- > the ground water.
- > How far has it leaked? There is already some tritium in the
- > Columbia River, measurable in Richland's drinking water supply --
- > although at well below federal safety standards. Mulberry bushes
- > measured along the Hanford shore also have shown substantial amounts of
- > strontium-90 and thorium, in addition to other toxic contaminants such
- > as chromium.
- > None of it, federal officials believe, is enough to jeopardize
- > public health. The Columbia's vast flows so far have diluted the
- > contamination to well within federal standards. But imagine what it will
- > be like in 10 or 20 years, say Washington state officials, who are
- > pushing for increased cleanup efforts.
- > Under the most optimistic scenario, the Energy Department says it
- > can clean up 10% of Hanford's leaky tanks by 2018. The rest of the waste
- > won't be hauled away for 40 to 50 more years. What of removing the tanks
- > themselves? No plan. Target date for completely removing contamination
- > around the tank farms and plutonium processing plants? Never.
- > The magnitude of cleaning up the plants that manufactured America's

> atomic weapon arsenal--facilities such as the Idaho National Laboratory,
 > the Savannah River Site in South Carolina, Rocky Flats near Denver and
 > Hanford--only recently has begun to be understood.

> While the DOE expects to spend at least \$186 billion over the next
 > 70 years cleaning up 53 sites across the country, there is a growing
 > realization that many of them will never be completely safe.

> In fact, there are more than 100 sites nationwide with
 > contamination that will require long-term stewardship. At places such as
 > Hanford and Savannah River, it means keeping some of the gates locked
 > forever. At a number of other sites, it means setting up agreements with
 > local governments to make sure that, maybe half a century down the road,
 > somebody doesn't unwittingly decide to build a housing tract or dig a
 > well atop a buried store of poison.

> "As the years go by, people are starting to realize that the
 > non-cleanup cleanup is all there's going to be. The fact is that we
 > don't know how to clean up some things," said Katherine Probst of
 > Resources for the Future, a nonpartisan group in Washington, D.C., that
 > studies environmental issues.

> There has never been an environmental restoration project of
 > Hanford's magnitude, with such a complex stream of deadly wastes spread
 > over so vast an area, near so vital a waterway.

> In addition to the stored wastes, there is an estimated 100 square
 > miles of contaminated ground water beneath the site, the result of
 > hundreds of billions of gallons of radioactive water dumped directly
 > into the ground over the years.

> Ten years and \$15 billion into the cleanup, some waste has been
 > treated or shifted to sturdier storage. But not a single ounce of
 > Hanford's plutonium-making legacy has been hauled away.

> That could change this spring, when waste processed at Hanford's
 > new state-of-the-art facility is scheduled to be shipped to the
 > government's Waste Isolation Pilot Plant in southern New Mexico for deep
 > underground burial.

> Hanford officials also recently announced a stepped-up timetable
 > for the \$1.7-billion project of retrieving, processing and storing the
 > irradiated spent fuel canisters from their current basins just 1,500
 > feet from the Columbia River.

> "There's more progress being done here than people realize," said
 > Keith Klein, who was brought in as the DOE's site manager for Hanford
 > last year.

> But cleanup projections stretch out 50 years, with costs likely to
 > exceed \$100 billion. And even then, the industrial heart of the Hanford
 > site known as the "200 area," where gray plutonium finishing plants sit
 > abandoned and fenced off, will probably have to be closed to public
 > access forever.

> The current plan for getting rid of the 54 million gallons of tank
 > waste is to separate the radionuclides, or radioactive material, from
 > other compounds that may be highly toxic but are not radioactive. The
 > toxic waste can be shuttled off to industrial hazardous waste
 > repositories. The much more complicated and expensive plan for the
 > radioactive waste calls for injecting it into liquid glass, or
 > vitrifying it, and then burying the glass deep under the Nevada desert.

> The DOE has awarded a \$6.9-billion contract to British Nuclear
 > Fuels Ltd. to build a plant to treat the first 10% of the radioactive
 > wastes.

> But scientists for the National Research Council already have
 > expressed doubts. Retrieving the waste from the damaged tanks, they
 > warn, could end up spilling just as much as already has leaked into the
 > ground over the years, about 1 million gallons.

> It would be hard to imagine a more treacherous chemical stew: An
 > estimated 190 million curies of radioactivity (2-millionths of a curie
 > of plutonium is deadly if it gets in a person's lungs) mix with various
 > highly toxic compounds within the giant steel-lined tanks buried up to
 > 30 feet underground. Most of the cement shells are 30 years beyond their
 > design life. Inside, the waste has curdled and boiled, forming volatile
 > gas deposits and toxic crusts atop the liquid. A total of 149 of the 177
 > tanks were built with a single steel shell. Of those, 69 already have
 > leaked. For the rest, Hanford officials admit, it is probably only a
 > matter of time.

> Some progress has been made. More than half of the 77 million
 > gallons in the most hazardous single-shell tanks has been pumped into
 > relatively safer double-shell vessels. "We will have all the liquids we

> can get out of the single-shell tanks by 2004," said Jon Peschong of
> Hanford's office of river protection.

> But that may be scant reason for relief. At least one of the
> double-shelled tanks has shown signs of deterioration. And none of the
> tanks should be considered safe storage, Hanford officials say.

> Only in the last few years have scientists begun to understand how
> serious a threat Hanford poses to the Columbia River, thanks in large
> part to a pair of engineers who resisted the government's long-held
> assertion to the contrary.

> For years, scientists knew there was some ground-water
> contamination from the more than 400 billion gallons of radioactive
> waste water that had been dumped there. But the hazardous wastes leaking out
> of the tanks—a nightmare, if they were to get into the ground
> water—posed no similar danger, scientists believed. The conventional
> wisdom was that radionuclides would bind to the soil immediately outside
> the tanks and stay there.

> But John Brodeur, a geophysicist working for the former Hanford
> cleanup contractor, argued that there was no way to know for sure, since
> monitors on the tanks weren't equipped to detect movement of
> contamination in the soil. Nobody listened until Casey Ruud, a nuclear
> auditor who already had blown the whistle on a number of Hanford safety
> shortfalls, was named environmental operations manager for the tank
> farms in 1995.

> The first thing he did was put Brodeur to work examining the soil
> below the storage tanks.

> Brodeur and Ruud started on the 15 tanks at the SX farm, probing
> 130 feet into the ground. "What we found . . . was contamination so hot
> it swamped our equipment. We couldn't even read it," Ruud recalls.

> Not until two years later, in November 1997, did Hanford's Pacific
> Northwest National Laboratory officially admit that "mobile" tank waste
> appeared to have reached the ground water 10 miles from the Columbia
> River.

> And there was more: Two contaminants, tritium and nitrate, which
> move as rapidly as water through the soil, already had reached the
> river.

> So far, ground-water manager Mike Thompson says, there is no
> indication that the worst stuff—radionuclides such as uranium,
> technetium-99 and cobalt-60—have made it as far as the river. The worst
> tank waste is probably still 20 years away, he believes.

> But a disturbing alarm was sounded in October, when the highest
> ground-water level of technetium-99 ever found at Hanford—38 times the
> federal drinking water standard—was discovered near one of the leaky
> single-shell tanks. Technetium-99 is one of the compounds that moves
> fastest through the soil.

> And then came last month's finding that tritium in the well near
> the old research and development disposal trenches was at the highest
> levels ever recorded on the Hanford site. The fact that other wells
> nearby showed only slight levels of contamination was a relief, but only
> a temporary one.

> Norm Buske is an oceanographer and physicist who has conducted
> radiation surveys all along the Columbia shore for the Government
> Accountability Project, a nonprofit group that supports
> whistle-blowers. He says his data show that the Hanford contamination
> may be moving much more quickly toward the river than previously
> believed, through a series of fast-track underground channels.

> Already, Buske's Geiger counter readings have documented elevated
> levels of strontium-90 in mulberry bushes along the river, and near
> salmon nesting areas on the river bottom. The government's preliminary
> studies have shown no negative effects on young salmon hatchlings so
> far. They say the strontium-90 found in mulberries along the river most
> likely came from contaminated soil and not migrating ground water.

> "It gets into the river and it's into everything: the fish, the
> food chain. The grapes, the apples, the cherries, the potatoes," warned
> Tom Carpenter, the Government Accountability Project's specialist on
> Hanford. "But there's a deep sickness in the whole system out there. The
> whole purpose of the apparatus at Hanford is not to find the problem.
> It's not to fix the problem. It's to assure the public that there isn't
> a problem."

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