Date: 11-17-03

To:

From: Alliance For A Clean Environment (ACE) Pottstown, PA

Contact: Dr. Lewis or Donna Cuthbert (610) 326-6433 or (610) 326-2387

Tooth Fairy

Research Results Reported

November 19 1:30 P.M.

Montgomery County Community College, College Drive, Pottstown

FIND OUT HOW MUCH STRONTIUM-90 RADIATION

IS IN THE BABY TEETH OF CHILDREN WHO LIVE AROUND THE LIMERICK NUCLEAR POWER PLANT

Agenda

- Dr. Lewis Cuthbert, ACE President
 Overview Regional Involvement In Tooth Fairy Project
 The Toxic Triangle Third Exposure Route Confirmed
- Joseph Mangano National Director, Radiation and Public Health Project
 Reporting Results of Strontium 90 Radiation Levels In Baby Teeth Collected
 Around the Limerick Nuclear Power Plant and compared to Strontium 90 levels in
 baby teeth around other nuclear power plants.
- 3. Pottstown Mayor Anne Jones
 - Greater Pottstown Area Children Support for this kind of research and call for prevention and solutions relationship to Pottstown Landfill expansion. Appeal for Baby Teeth, especially for children with cancer and in areas closest to, and in the predominant wind patterns from, the Limerick Nuclear Plant, including Limerick, Linfield, Schwenksville, Spring City, East Coventry Phoenixville, Trappe, Collegeville, Royersford.
- 4. Aaron Holden Owen J. Roberts student who lives near the Limerick Nuclear Plant A personal view of his battle with cancer - Need to prevent unnecessary exposure risks which can cause cancer - Support for the Tooth Fairy Research Project.
- 5. Dr. Lewis Cuthbert ACE Plan For Prevention and Solutions

TOOTH FAIRY

PRESS CONFERENCE

Nov. 19, 2003

Held By:
Pottstown Mayor Jones
Alliance For A Clean Environment
JOSEPH MANGANO, RADIATION AND PUBLIC HEALTH PROJECT DIRECTOR

ANNOUNCMENT OF RPHP RESEARCH RESULTS

RADIATION IN THE BABY TEETH OF CHILDREN AROUND LIMERICK NUCLEAR POWER PLANT

AND

HOW THAT COMPARES WITH OTHER NUCLEAR FACILITIES.

Montgomery County Community College

RPHP has been studying levels of radioactive Strontium-90 in baby teeth for several years.

- Sr-90 is a chemical only produced by atomic bomb explosions and nuclear reactor operations.
- It is chemically similar to calcium; thus, when it is ingested by breathing or the food chain, it attaches to bone and teeth, where it remains for a lifetime.
- Sr-90 presents a risk factor for all cancers and immune diseases, as it can
 penetrate into the bone marrow, where the white blood cells crucial to the immune
 system are formed.

The RPHP presentation will cover the following regional baby tooth results:

- The average level of Sr-90 in about 100 baby teeth from the region around the Limerick nuclear reactors will be compared with other areas near reactors.
- The trend in Sr-90 in baby teeth over the past 20 years will be analyzed.
- A comparison of trends in Sr-90 in baby teeth and childhood cancer rates will be made. The above information will be published in the medical journal, The Science of the Total Environment, in January 2004.

RPHP will also announce its latest effort in its study of baby teeth.

RPHP is making an appeal for donations of baby teeth from children with cancer, and is comparing Sr-90 averages in teeth of children with and without cancer. RPHP will appeal for baby tooth donations from local children who have been diagnosed with cancer.



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Grim results expected from Tooth Fairy Project

By Evan Brandt ebrandt@pottsmerc.com

POTTSTOWN - When the Tooth Fairy comes to town this afternoon, he won't be bringing good news.

Joseph Mangano, national director of the Radiation and Public Health Project, will be in town to announce the results of a study that looked for a radioactive isotope in baby teeth of local children.

The report will be explained in detail at a 1:30 p.m. press conference at the from Pottstown children is 62 percent

Montgomery County Community higher, according to the report. College campus in Pottstown. It is open to the public.

A copy of the report was obtained Tuesday by The Mercury and a review suggests the results of the study are grim.

The level of the isotope in the 95 baby teeth from Montgomery, Berks and Chester counties for children born after 1979 is 34 percent higher than the rest of Pennsylvania, the report says.

Even worse, the average in teeth

The study says the age of the teeth is significant because the first unit of what is now Exelon Nuclear's Limerick Generating Station began operations in 1984 and the second unit in 1989.

Further, there are 11 other operating nuclear reactors within 80 miles of Pottstown.

The substance being studied is called strontium-90 and, according to the report, is one of 100 different radioactive isotopes produced only by atom (See TOOTH FAIRY PROJECT on A4)

LOCAL

Grim results expected from Tooth Fairy Project

(TOOTH FAIRY PROJECT from A1)

bombs, nuclear submarines and nuclear reactors.

Each of these substances is carcinogenic and decays at different rates. What makes strontium-90 a good substance to study is its long half-life, 28.7 years, and the fact that it behaves in a manner similar to calcium and adheres to bone.

So the aptly named Tooth Fairy Project collects baby teeth saved by parents and tests them for strontium-90.

Nationally, the project has collected more than 4,000 baby teeth, mostly from children born since the mid-1980s living close to one or more nuclear reactors, according to the report.

Levels of the isotope, which were high during the 1950s when above-ground nuclear bomb testing was common, are on the rise again in the 1990s, according to the report.

And results from the 100 baby teeth submitted from Berks, Chester and Montgomery counties show local levels of strontium-90 to be above both the state and national average, the highest level being in Pottstown itself, according to the study.

The study takes things a step further.

Because strontium-90 is a known carcinogen, Mangano's study also looks at cancer rates in the area.

Preliminary results of Mangano's examination of cancer statistics, were released earlier by the Alliance for a Clean Environment, which is sponsoring today's press conference.

They showed a cancer rate among children to be 94 percent higher in the tri-county area than national, state and regional rates.

Childhood cancer mortality in Montgomery County rose 30 percent from the 1980s through the 1990s, compared to a 22 percent reduction in the state and nation, according to the report.

Some of Mangano's figures had come under fire, but last week the Pennsylvania Health Department released its own comparison of the same statistics and confirmed many of Mangano's findings, such as higher rates of breast cancer, brain cancer and leukemia.

However, state officials intoned the same cautions as others who have disputed Mangano's statistics, arguing that the overall number of local cases being compared is too small a sample from which to draw a reliable statistical conclusion.

A previous study conducted by Mangano's group in Suffolk County, Long Island, near the Brookhaven Nuclear Plant, showed a "nearly identical" increase in incidences of childhood cancer and increases in the strontium-90 found in baby teeth

Nationally, the center has collected 95 teeth from children with cancer and has tested 61-of them. Results show the average level of strontium-90 in the teeth of children with cancer is 50 percent higher than in teeth taken from children without cancer.

An analysis of baby teeth from the Pottstown area, compared to cancer statistics for the same area, "suggests a link between radiation and cancer in Berks, Chester and Montgomery county children," according to the study.

"Teeth from children with cancer living in the Limerick area will be sought in the near future," the report notes. Although there appears to be a four-year lag between high levels of strontium-90 and high rates of childhood cancer, the study notes "when Sr-90 increased, there was an increase in cancer incidence four years later."

Officials at the Exelon Nuclear's Limerick Generating Station, as well as government officials at the Nuclear Regulatory Commission, have long argued that the low levels of radiation emitted by properly operating nuclear power plants are too low to be a cause for alarm.

But Mangano's group argues that's what doctors used to say about things like exposure to Xrays and other low doses of radiation.

That was until studies proved otherwise.

"The above results suggest that current reactor emissions — not old fall-out from Nevada bomb tests in the 1950s and 1960s — account for a substantial proportion of radioactivity in bodies of local children," the report concludes.



Thursday, November 20, 2005

MANA MORNE SERVICE CONTROL OF SERVICE SERVICES

Potistowa, Pennsylvania

Daniel P. Creighton/The Mercury

Jared Grater, 7, and his sister, Brooke Grater, 4, entertain themselves with coloring books as Joe Mangano, national director for the Radiation and Public Health Project, announces the results of a baby tooth study for the Pottstown area.

ACE: Study shows 'potential link' to radiation, cancer

By John Gentzel igentzel@pottsmerc.com

POTTSTOWN — Aaron Holden knows what it's like to be young and have cancer.

The Owen J. Roberts High School student was diagnosed with cancer several years ago, and missed lots of school. And in the process, Holden said he lost many friends. Those classmates who would talk to him "were afraid of catching cancer," he said.

Many in the community, including the members of the Alliance for a Clean Environment, believe that Holden is an unfortunate casualty of living inside what it calls the toxic triangle surrounding Pottstown.

The triangle is comprised of the toxic emissions coming from Occidental Chemical in Lower Pottsgrove and the Pottstown Landfill in West Pottsgrove, and the radiation from Exclon Nuclear's Emerick Generating Station. And this combination of pollutants is why ACE and other environmental activists believe the Pottstown area has significantly higher cases of certain types of cancer, including those affecting children.

On Wednesday, Joseph Mangano, national director of the Radiation and Public Health Project, discussed the results of a study that local activists believe reaffirm existence of the toxic triangle.

The aptly titled Tooth Fairy Project looks at the levels of a radioactive isotope in the baby

(See TOOTH FAIRY PROJECT on A3)

ACE: Study shows 'potential link' in toxic triangle to radiation, cancer

(TOOTH FAIRY PROJECT from A1)

teeth of children across the country. So far, Mangano said, nearly 4,000 teeth have been studied nationally, including many in the Pottstown area.

The level of the isotope in question, strontium-90, in the 95 baby teeth-collected in communities in the Pottstown area from children born after 1979 is 34 percent higher than the rest of Pennsylvania, the study says. Even worse, the average in teeth from Pottstown children is 62 percent higher, according the report.

Because strontium-90 is a known carcinogen, Mangano's study also looked at cancer rates in the area. The results show the cancer rate in Pottstown area children to be 94 percent higher than the national, state and regional rates.

The information represents a "potential link" between radiation and cancer, and ACE President Lewis Cutibert said they were advocating the closing of the landfill and the opposition of renewing Limerick Generating Station's operating permit.

"It has now been confirmed that they are also at risk from Limerick's radiation," Pottstown Mayor Anne Jones said at the press conference. "We now know, that radiation gets into the bodies of our children. That our children are far more vulnerable. That there is no safe exposure. And that on

The results show the cancer rate in Pottstown area children to be 94 percent higher than the national, state and regional rates.

average more children have cancer here than anywhere else."

Strontium 90 is not a naturally occurring product! It's one of 100 radioactive isotopes released by atomic bombs, nuclear, submarines and nuclear reactors.

Since nuclear weapons haven't been tested above ground since the 1960s, and the level of strontium 90 has increased, Mangano said the likely cause of the increase is the nation's nuclear power plants.

Lisa Washak, spokeswoman for Exelon Nuclear's Limerick Generating Station, said officials were familiar with the study. She argued that the information has "never been substantiated by scientific evidence" and is often used to "support an anti-nuclear agenda."

Washak said a comprehensive environmental study was conducted before construction of the Limerick Generating Station in the 1970s to determine what elements were in the air, ground and water. Since both reactors started operating in the late 1980s, the facility constantly monitors its releases and conducts thorough envi-

ronmental testing to make sure all emissions are consistent or lower than pre-operational background levels and compliant with all state and federal regulations. The information is available to the public and is reviewed by the Nuclear Regulatory Commission:

"There's nothing here that wasn't here before we built the plant," Washak said

Other skeptics of the Tooth Fairy Project point out that it's impossible to make any reasonable determination from such a small sample of the population, only 95 of the millions of people in Pennsylvania.

Additionally, the study seems to have no control group, or tests results from areas away from nuclear facilities. This is particularly prevalent in the results presented Wednesday, as all 95 teeth sampled were collected from communities surrounding nuclear plants, including 34 in Pottstown alone, And, opponents argue, while the levels may seem high, they might be comparable to levels of strontium-90 found in the baby teeth of children in other areas.

Still, the results are staggering enough for many to want further explanations provided and studies conducted.

"We need to work together starting today," Cuthbert said. "We don't have any expendable children that we're willing to give over to those polluters and have them wind up as victims."

CHILD CANCER SOARS IN MONTGOMERY, PHILADELPHIA COUNTIES RISING RADIATION FROM LIMERICK NUCLEAR PLANT MAY BE CAUSE

Limerick PA, April 14, 2005 – Rates of leukemia and other cancers in Montgomery and Philadelphia County children have soared since 1990, when national rates are either unchanged or declining, according to a new report presented today.

The unusual increase may be due to airborne radioactive emissions from the Limerick nuclear plant entering children's bodies. A study of Strontium-90 (a chemical found only in nuclear weapons and reactors) found local rates rose 26% from the late 1980s to the early/mid 1990s.

"Infants and children suffer most from radiation exposure," says Joseph Mangano, National Coordinator of the Radiation and Public Health Project (RPHP) research group, and author of both the cancer and tooth studies. "Higher local levels of Sr-90 and childhood cancer after Limerick began operations must be taken seriously by plant operators and regulators."

Limerick, a plant with two reactors, began operations in December 1984 and reached full capacity in January 1990. During the early years of operation, cancer and leukemia death rates for children under age 15 in both Montgomery and Philadelphia Counties were well below the national rate. But in the post-startup period (1991-2002), cancer mortality jumped 48.0% and 22.3%, respectively, compared to a national decline of -20.3%. For leukemia deaths, rates rose 16.0% and 46.4%, compared to a national decline of -27.6%. Montgomery and Philadelphia counties lie southeast of Limerick, which is the downwind direction for much of the year.

RPHP collected 150 baby teeth from Pennsylvania children as part of a national study of over 4,000 baby teeth. In medical journal articles, RPHP found that Pennsylvania had the highest average Sr-90 in teeth of any of the six states with significant numbers of teeth; and that the Limerick's average was highest near seven nuclear plants studied, especially in the Pottstown area, where Limerick is located.

Since 1998, Limerick's reactors have operated over 96% of the time, raising concerns whether an aging plant may be releasing more harmful radioactivity into the environment. Data were made available on the day that U.S. Nuclear Regulatory Commission officials held a public meeting with Exelon, which operates the Limerick plant, to assess its 2004 performance.

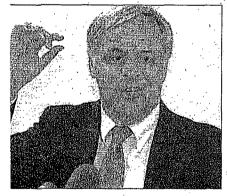
High local rates of cancer include adults as well as children. Of the 60 most populated U.S. counties, Philadelphia has the highest age-adjusted cancer death rate, both for whites and blacks, from the period 1997-2002. About 4,000 Philadelphia residents die of cancer each year.



APRIL 17, 2005

AS PUNEAR PAREAVIIII II IN AVERTER

s cancer a nuclear plant failout?



Researcher asks NRC to study health of people living near sites

It would be irresponsible, Joseph Mangano said, to ignore the fact that the rate for childhood cancers in the area around the Limerick plant was below the national average before the plant was built and is now above the national average.

By Evan Brandt ebrandt@pottsmerc.com

POTTSTOWN — The fact that Philadelphia County has the highest cancer death rate of the 60 most populated counties in the nation as well as the nation's largest concentration of nuclear power plants within 90 miles should not be dismissed as a coincidence, a researcher argued this past week.

Holding a press conference Thursday morning, hours before the Nuclear Regulatory Commission's annual performance assessment of Exelon Nuclear's Limerick Generating Station which followed that evening, Joseph Mangano said he is trying to sound a warning.

Mangano, who heads the controversial Radiation and Public Health Project, came armed with a fistful of sta-

tistics that he said may not prove conclusively that nuclear power plants are causing cancer, but are certainly alarming enough to warrant further study.

Here are a few of those statistics:

• The Environmental Protection Agency's nearest radiation monitoring station is in Wilmington, Del.

From 2000 to 2003 of level of radia-

(See NUCLEAR PLANTS on A3)

Sunday, April 17, 2005 / A3

is cancer a failout of nuclear plants?

Researcher asks NRC to study health of people living near sites

(NUCLEAR PLANTS from A1)

tion measured in precipitation at the station rose by 15.2 percent over measurements taken in the early 1990s, Mangano said at a Thursday press conference at Montgomery County Community College's West Campus in Pottstown.

The period of increase coincides roughly with the time the Limerick Plant has been running at close to 100 per-

cent capacity, which began around 1998.

• A chemical called strontium-90 does not occur in nature and is produced only by nuclear fission reactions, like those that power nuclear plants. This chemical behaves in the body like calcium and attaches itself to

As a cause of cancer, it damages cell's behaving "like a wild bull in a China shop," said Mangano, and tends to create cancer more often in children, whose cells are more

vulnerable to damage.

In the 1950s and 1960s, a study by the Washington University School of Medicine in St. Louis measured the level of strontium-90 in 320,000 baby teeth to conclude that radiation from above-ground nuclear tests was slowly poisoning Americans and giving them cancer.

That eventually led to the 1963 treaty banning aboveground nuclear tests and within five years, the level of strontium-90 in baby teeth dropped by half, he said.

It rose again with the advent of nuclear power, said Mangano, whose Tooth Fairy Project has similarly been collecting baby teeth -4,400 so far - and has found in them a rise in strontium-90.

Of those teeth, 600 were from Long Island, N.Y. where

Mangano's first studies were done.

So far, he has received 100 teeth from Pennsylvania residents, and the 37 of them that were from the 19464 and 19465 zip codes had the highest level of strontium-90 of all the Pennsylvania samples, he said.

Mangano acknowledged the criticism — a rather lengthy one is posted on the NRC Web site - that he should not be drawing conclusions from such small samples, saying

he is seeking more samples every day.

But Mangano argued that even the small samples show the same strontium-90 trends he found in the larger sam-

ple of 600 on Long Island.

He also said the project has received 40 teeth from children who grew up in the Philippines, which has never had a nuclear power plant, and strontium-90 levels in those teeth are one-half those he has studied from the United

... In a California community, the project found a 40 percent increase in strontium-90 levels when comparing baby teeth from the time before a nuclear plant was built to after it was put on line, he said.

• Then there are the cancer rates — leukemia in partic-

Nationally, cancer rates are falling, but not in Philadelphia and Montgomery counties, said Mangano.

While rate of leukemia deaths has dropped 27.6 percent nationally, it has jumped by 46.4 percent in Philadelphia and 16 percent in Montgomery County, according to figures from the U.S. Centers for Disease Control supplied: by Mangano.

Since the late 1980s, leukemia incidences in children under 15 has "soared" almost 30 percent in Montgomery County and almost 50 percent in Philadelphia, while it

has dropped by 0.7 percent nationally.

Of the 60 most populated counties, which represent one third of the entire nation's population, Philadelphia

ranks highest in cancer deaths.
"Look, I am not saying we have evidence that there is a direct link here, there are many factors that go into causing cancers - income, health insurance, genetics, behavior," said Mangano.

What I am saying is we must consider these low doses

of radiation exposure as one possible factor."

It would be irresponsible, Mangano said, to ignore the fact that the rate for childhood cancers in the area around the Limerick plant was below the national average before the plant was built and is now above the national average.

The NRC and nuclear industry argue that the low doses of radiation produced by nuclear power plants are not

But the government has argued this in the past, Mangano said, and subsequently been proven wrong

He said for years, the government argued that the low level of radiation to which workers who built nuclear weapons were exposed posed no health risk.

But in 2000, the Department of Energy conceded those workers had suffered from cancer in large numbers due to

low level exposure.

The nuclear bomb tests in Nevada were called safe by

the government until the baby teeth study.

In 1997, the National Cancer Center concluded that 212,000 Americans had contracted thyroid cancer as a result of those bomb tests.

"There is an assumption by the industry and government that low levels of radiation are harmless, but we don't think that assumption is grounded in adequate sci-

ence." Mangano said.

Rather than criticizing the project's methodology, as it has done in an eight-page critique on its Web site, the NRC should be looking at the results and considering an in-depth study of its own and more stringent regulations on nuclear plants, Mangano said.

This is particularly germane when considering that the EPA just last month issued a new set of guidelines for assessing risk that indicate children are three times more susceptible to the negative effects of harmful chemicals and infants 10 times more susceptible, Mangano said.

We would hope they would be as concerned about these results as we are and decide to take action and either be partners with us, or start their own studies, rather than

just practice denial," he said.

CHILD LEUKEMIA DEATH RATES INCREASE NEAR U.S. NUCLEAR PLANTS

RISES GREATEST NEAR OLDEST PLANTS, DECLINES NEAR CLOSED PLANTS

Contact Joseph Mangano, 609-399-4343

New York, Nov. 11, 2008. Leukemia death rates in U.S. children near nuclear reactors rose sharply (vs. the national trend) in the past two decades, according to a recent study.

The greatest mortality increases occurred near the oldest nuclear plants, while declines were observed near plants that closed permanently in the 1980s and 1990s. The study was published in the most recent issue of the *European Journal of Cancer Care*.

The study updates an analysis conducted in the late 1980s by the National Cancer Institute (NCI). That analysis, mandated by Senator Edward M. Kennedy (D-MA), is the only attempt federal officials have made to examine cancer rates near U.S. nuclear plants.

U.S. Rep. Edward J. Markey (D-MA), a senior member of the House Energy and Commerce Committee, said, "Nothing is more important to American families than the health of their children. It is critical that we continue to improve our understanding of the causes of child leukemia and learn how this heartbreaking disease be prevented, therefore this study deserves critical consideration."

Actor and advocate Alec Baldwin said "exposure to ambient levels of radiation near nuclear reactors used by public utilities has long been suspected as a significant contributor to various cancers and other diseases." Baldwin, who has a long-standing interest in radiation health issues, adds "nuclear power is not the clean, efficient energy panacea to which we are presently being reintroduced. It is dirty, poses serious security threats to our country, and is ridiculously expensive. Nukes are still a military technology forced on the American public with a dressed up civilian application."

Study authors were epidemiologist Joseph Mangano MPH MBA, Director of the Radiation and Public Health Project and toxicologist Janette Sherman MD of the Environmental Institute at Western Michigan University. They analyzed leukemia deaths in children age 0-19 in the 67 counties near 51 nuclear power plants starting 1957-1981 (the same counties in the NCI study). About 25 million people live in these 67 counties, and the 51 plants represent nearly half of the U.S. total).

Using mortality statistics from the U.S. Centers for Disease Control and Prevention, Mangano and Sherman found that in 1985-2004, the change in local child leukemia mortality (vs. the U.S.) compared to the earliest years of reactor operations were:

- An increase of 13.9% near nuclear plants started 1957-1970 (oldest plants)
- An increase of 9.4% near nuclear plants started 1971-1981 (newer plants)
- A decrease of 5.5% near nuclear plants started 1957-1981 and later shut down

The 13.9% rise near the older plants suggests a potential effect of greater radioactive contamination near aging reactors, while the 5.5% decline near closed reactors suggests a link between less contamination and lower leukemia rates. The large number of child leukemia deaths in the study (1292) makes many of the results statistically significant.

The Mangano/Sherman report follows a 2007 meta-analysis also published in the *European Journal of Cancer Care* by researchers from the Medical University of South Carolina. That report reviewed 17 medical journal articles on child leukemia rates near reactors, and found that all 17 detected elevated rates. A January 2008 *European Journal of Cancer* article that found high rates of child leukemia near German reactors from 1980-2003 is believed to be the largest study on the topic (1592 leukemia cases).

The carcinogenic effects of radiation exposure are most severe among infants and children. Leukemia is the type of childhood cancer most closely associated with exposures to toxic agents such as radiation, and has been most frequently studied by scientists. In the U.S., childhood leukemia incidence has risen 28.7% from 1975-2004 according to CDC data, suggesting that more detailed studies on causes are warranted.

The Radiation and Public Health Project is a non-profit group of health professionals and scientists based in New York that studies health risks from radioactive exposures to nuclear reactors and weapons tests. RPHP members have published 23 medical journal articles on the topic. A copy of the child leukemia article (PDF or faxed) is available upon request from Mangano.

Chernobyl: Lessons Learned

<u>Life Extension</u> - December 2004 (60) said 2.3 Million children living in eastern Russia, southern Belarus, and northern Ukraine were exposed to excess radiation.

- Within 4 years there was a sharp spike in the incidence of thyroid cancer. This increase occurred in children who had received less than 30 rems of radioiodine to the thyroid.
- Within 15 years, more than 1,000 cases of thyroid cancer had been reported in the affected area, a 30 to 60 fold increase.
- All of the cases, according to the World Health Organization, were "most probably solely attributable to this single release of radioactivity to the environment".
- The Chernobyl experience confirmed a valuable lesson: children are by far the most vulnerable to radiation exposure, even in relatively small doses.
- Children exposed to radiation suffer from:
 - ✓ higher rates of certain childhood cancers
 - ✓ especially leukemia and thyroid cancer
 - ✓ have a greater likelihood of developing breast cancer as adults
- Children's greater vulnerability to radiation exposure is attributable to several factors, according to the American Academy of Pediatrics.
 - 1. Children have higher minute ventilation, or a higher concentration of tiny capillaries in the lungs. This leads to greater radioactivity exposure from the same amount of radiation material.
 - 2. Children are extra sensitive to the DNA-damaging effects of radioactive energy.

"CHERNOBYL: Consequences of the Catastrophe for People and the Environment."

From the Annals of the New York Academy of Sciences, Janette Sherman Consulting Editor. To purchase a copy www.nyas.org.

This comprehensive report was based on 5,000 studies that show the Chernobyl explosion effects were far greater than claimed, especially for children. Actual facts about radioactive fallout from Chernobyl have been disclosed in this book based on over 5,000 studies, written by three Russians, published in English in 2009.

The Chernobyl reactor exploded on April 26, 1986, spewing radiation across the earth. The Chernobyl nuclear power explosion released hundreds of times more radiation than the bombs dropped on Hiroshima and Nagasaki. Radioactive contamination spread across the entire northern hemisphere, exposing 400 million people. The newly translated report, originally in Russian and published by the New York Academy of sciences in 2009, shows that by 2004, 985,000 additional deaths worldwide were caused by this disaster.

While cancer incidence and deaths in humans have been emphasized, other illnesses increased, including those of the heart, thyroid, kidney, bone, lung, cataracts among the young, accelerated aging, and immunological abnormalities.

<u>Children</u> have been and continue to be particularly affected with multiple adverse health outcomes. Before Chernobyl exploded, eighty percent of children were considered healthy. After the explosion only twenty percent of children are healthy in some areas.

- Cuba, one of dozens of countries treating the sick, put out a completely ignored news story this year that they have treated over 25,000 children for leukemia from the Ukraine and Russia. Cuba's data have been ignored simply because the pronuclear IAEA can get global coverage that only 50 people died using claims that are now over 20 years old.
- Many children experienced poor development, learning disabilities, and endocrine abnormalities.
- Of great concern are increased prenatal and infant mortality and birth defects among those not even born at the time of the catastrophe.

- Impacts to the 600,000 workers who were forced to clean up Chernobyl without proper protective gear have been ignored.
- Large numbers of people were never removed from contaminated regions.
- Many life systems were studied including humans, wolves, livestock, birds, fish, plants, mushrooms, bacteria, and viruses. Most all were changed by radioactive fallout, many irreversibly.

"This finds low doses, over time, can result in cumulative damage which is equal to or greater than a higher single dose," said Dr. Janette Sherman, editor of the book.

"Since nuclear reactors continually release radiation as they operate, we have not yet calculated the damage to ourselves and our environment caused by 'normally operating' nuclear power reactors".

CHERNOBYL: LESSONS LEARNED

Facinately, scientists have not had much opportunity to study the effects of a nuclear emergency on human beings. Nuclear weapons have been used only twice against people, in Hiroshima and Nagasaki, Japan, near the end of the World War II. There have been only a handful of nuclear reactor meltdowns, and only one that released deadly levels of radioactive energy. It occurred in April 1986, at a nuclear reactor in Chernobyl, Ukraine.

Chemobyl was the first miclear emergency large enough to threaten the health and well-being of millions of people. During that catastrophe, one of the main reactors of the power plant melted down, releasing an estimated 120 million curies of radioactive material. The surrounding land was heavily contaminated with plutonium and ces 1 as well as with dangerous levels of radioactive iodine. Ultimately, -more than 21,000 square kilometers of land were contaminated, and about 135,000 people were permanently evacuated. Experts later estimated that 17 million people were exposed to excess radiation,4 including 2.3 million children living in eastern Russia, southern Belarus, and northern Ukraine,5

At first, scientists did not appreciate the threat posed by high levels of radioiodine released during the meltdown. It did not take long, however, to start seeing the effects. Within four years, there was a sharp spike in the incidence of thyroid cancer. This increase occurred in children who had received less than 30 rems of radioidine to the thyroid. Within 15 wars, more than 1,000 cases of thyroid cancer had been reported in the affected areas, a 30- to 60-fold increase. All of the cases,

according to the World Health Organization, were "most probably solely attributable to this single release of radioactivity to the environment." Significantly, none of these areas made potassium iodide widely available.

Following the Chernobyl melt-down, Poland immediately distributed 17 million doses of potassium iodide, including 10 million to children. This was the first time scientists had an opportunity to study the side effects of potassium iodide in a large population. The news was encouraging: side effects were clinically insignificant.⁶

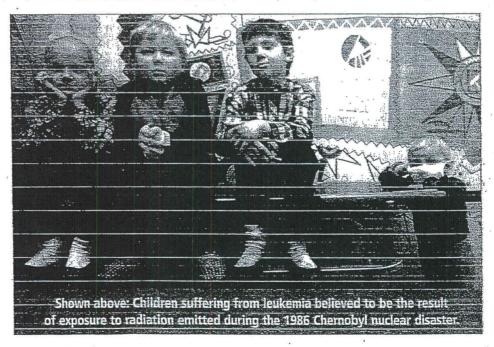
Awful as it was, the Chernobyl experience confirmed a valuable lesson children are by far the most vulnerable to radiation exposure, even in relatively small doses. Children exposed to radiation suffer from higher rates of certain childhood cancers, especially leukemia and thyroid cancer, and have a greater likelihood of developing breast cancer as adults.

Children's- greater vulnerability to radiation exposure is attributable to several factors, according to the American Academy of Pediatrics. First, children have higher minute ventilation, or a higher concentration of tiny capillaries in the lungs. This leads to greater radioactivity exposure from the same amount of radioactive material. Second, children are extra sensitive to the DNA-damaging effects of radioactive energy. Finally, children are more likely than adults to suffer from long-term psychological injury due to a radiation disaster.

GUIDELINES FOR PROTECTION

Fortunately, adults and children who are given potassium iodide may be completely protected from radioiodine. According to the Federal Register, "potassium iodide should be stockpiled and distributed to emergency workers and institutionalized persons for radiological emergencies at a nuclear power plant and its use should be considered for the general public within the 10-mile emergency planning zone of a nuclear power plant."*

Significantly, however, this is only a recommendation. The final decision to stockpile potassium iodide has been left to state and local governments. Although the NRC has made free doses available to local governments, a significant



EPA Said: Children Are More At Risk

March, 2003

EPA stated:

- Fetuses and Children under two are at 10 times greater risk from cancer causing chemicals.
- Children 3 to 15 face a risk at least 3 times greater than adults.

ACE Conclusions:

Routine radiation emissions from Limerick Nuclear Power Plant clearly have to be a major factor in the extraordinarily high rates of childhood cancer, far higher than the national, state, and tri-county averages in the six communities studied that are close to Limerick Nuclear Plant.

Radiation is one of the most potent carcinogens. The National Academy of Sciences in 2005 said there is no safe level of radiation exposure.

There are 100 to 200 radionuclides associated with producing nuclear power. Limerick routinely releases a broad range of radionuclides. Levels released into the air are not accurately measured. Not all radionuclides released are even known, much less reported.

Shocking elevated childhood cancer statistics close to Limerick Nuclear Plant are not surprising. When radiation is routinely released into the air and there is no safe level of exposure, it is easy to understand why children in communities close to Limerick Nuclear Plant have far higher cancer rates than the nation, state, and tri county.

EPA moves to protect kids from chemical

By H. Josef Hebert Associated Press Writer

WASHINGTON - The government proposed tougher guidelines Monday for evaluating cancer risks to children on grounds the very young may be 10 times more vulnerable than adults to certain chemicals.

The guidelines when made final after a review by the Environmental Protection Agency's science advisory board, would dramatically alter current agency policy, which assumes cancer risks to a fetus or an infant are no greater than for a similarly exposed adult.

For the time being, the increased scrutiny would be limited to assessing a group of chemicals that damage a person's genes by causing them to mutate so that cancer may form more easily later in life. Among these are some pesticides as well as a number of chemicals released in combustion or used in the making of plastics.

The agency said that as more information is developed, other cancer-causing pollutants, net those that cause gene mutations, may also be brought. under the new guidelines if they are found to pose heightened risk to children.

How to assess cancer risk to the very young from environmental pollution has been an icantly more dangerous to fetuses when the mother ic question vexing the EPA for years. This would be the first time the EPA has proposed formally taking into account the dren under 2 years old and in differences between exposure to an adult and a baby or toddler in assessing cancer risks.

The final guidelines are to be reviewed by the EPA science advisory board in May, with a final document to be issued by summer, said Bill Farland, the EPA's acting deputy assistant administrator for science.

The EPA also revealed broader guidance Monday attempts to refine and make more precise how EPA scientists cvaluate cancer risks when deciding how to regulate a chemical. The new guidance would recommend that scientists give greater weight to the latest science and try to develop a more complete picture, said Farland.

But the EPA viewed the question of exposure to children so significant that it decided to develop a separate guidance paper on risks of cancer to the very young, assuming for the first time that fetuses, infants and toddlers are substantially more vulnerable.

Limiting its analysis, for the time being, to mutagenic chemicals, or those that cause gene mutations, the EPA said exposure to these chemicals is signif-

young children.

They cause a 10 times greater tisk of a future cancer in chilexposed, the EPA guidance con cluded. It said children from 3 to 15 may face a risk at least three times greater than adults.

EPA Admits:

Fetuses and Children under 2 Can be 10 Times More Vulnerable Than Adults. To Mutagenic Toxic Chemicals

Children 3 to 15 Can be 3 Times More Vulnerable

Increased Cancers Near Nuclear Plants

New Scientist, April 24, 2008

REASONABLE DOUBT

[Rachel's introduction: "New evidence of an association between increased cancers and proximity to nuclear facilities raises difficult questions. Should pregnant women and young children be advised to move away from them? Should local residents eat vegetables from their gardens? And, crucially, shouldn't those governments around the world who are planning to build more reactors think again?"]

By Ian Fairlie

Among the many environmental concerns surrounding nuclear power plants, there is one that provokes public anxiety like no other: the fear that children living near nuclear facilities face an increased risk of cancer. Though a link has long been suspected, it has never been proven. Now that seems likely to change.

Studies in the 1980s revealed increased incidences of childhood leukaemia near nuclear installations at Windscale (now Sellafield), Burghfield and Dounreay in the UK. Later studies near German nuclear facilities found a similar effect. The official response was that the radiation doses from the nearby plants were too low to explain the increased leukaemia. The Committee on Medical Aspects of Radiation in the Environment, which is responsible for advising the UK government, finally concluded that the explanation remained unknown but was not likely to be radiation.

There the issue rested, until a recent flurry of epidemiological studies appeared. Last year, researchers at the Medical University of South Carolina in Charleston carried out a meta-analysis of 17 research papers covering 136 nuclear sites in the UK, Canada, France, the US, Germany, Japan and Spain. The incidence of leukaemia in children under 9 living close to the sites showed an increase of 14 to 21 per cent, while death rates from the disease were raised by 5 to 24 per cent, depending on their proximity to the nuclear facilities (European Journal of Cancer Care, vol 16, p 355).

This was followed by a German study which found 14 cases of leukaemia compared to an expected four cases between 1990 and 2005 in children living within 5 kilometres of the Krummel nuclear plant near Hamburg, making it the largest leukaemia cluster near a nuclear power plant anywhere in the world (Environmental Health Perspectives, vol 115, p 941).

This was upstaged by the yet more surprising KiKK studies (a German acronym for Childhood Cancer in the Vicinity of Nuclear Power Plants), whose results were published this year in the <u>International Journal of Cancer (vol 122, p 721)</u> and the <u>European Journal of Cancer (vol 44, p 275)</u>. These found higher incidences of cancers and a stronger association with nuclear installations than all previous reports. The main findings were a 60 per cent increase in solid cancers and a 117 per cent increase in leukaemia among young children living near all 16 large German nuclear facilities between 1980 and 2003. The most striking finding was that those who developed cancer lived closer to nuclear power plants than randomly selected controls. Children living within 5 kilometres of the plants were more than twice as likely to contract cancer as those living further away, a finding that has been

accepted by the German government.

Though the KiKK studies received scant attention elsewhere, there was a public outcry and vocal media debate in Germany. No one is sure of the cause (or causes) of the extra cancers. Coincidence has been ruled out, as has the "Kinlen hypothesis", which theorises that childhood leukaemia is caused by an unknown infectious agent introduced as a result of an influx of new people to the area concerned. Surprisingly, the most obvious explanation for this increased risk -- radioactive discharges from the nearby nuclear installations -- was also ruled out by the KiKK researchers, who asserted that the radiation doses from such sources were too low, although the evidence they base this on is not clear.

Anyone who followed the argument in the 1980s and 1990s concerning the UK leukaemia clusters will have a sense of deja vu. A report in 2004 by the Committee Examining Radiation Risks of Internal Emitters (2 Mbyte PDF), set up by the UK government (and for which I was a member of the secretariat) points out that the models used to estimate radiation doses from sources emitted from nuclear facilities are riddled with uncertainty. For example, assumptions about how radioactive material is transported through the environment or taken up and retained by local residents may be faulty.

If radiation is indeed the cause of the cancers, how might local residents have been exposed? Most of the reactors in the KiKK study were pressurised water designs notable for their high emissions of tritium, the radioactive isotope of hydrogen. Last year, the UK government published a report on tritium which concluded that its hazard risk should be doubled. Tritium is most commonly found incorporated into water molecules, a factor not fully taken into account in the report, so this could make it even more hazardous.

As we begin to pin down the likely causes, the new evidence of an association between increased cancers and proximity to nuclear facilities raises difficult questions. Should pregnant women and young children be advised to move away from them? Should local residents eat vegetables from their gardens? And, crucially, shouldn't those governments around the world who are planning to build more reactors think again?

Ian Fairlie is a London-based consultant on radiation in the environment

THYROID CANCER

And

Limerick Nuclear Plant

Since 1985 When Limerick Nuclear Plant Started Operating, Thyroid Cancer Rates Soared In The County Where Limerick Nuclear Plant Is Located.

1985-86 to 1996-97

128% Increase

Source: PA Cancer Registry

1998,1999, 2000

75% Higher

Than The U.S. Rate Which Is Also Rising Source: CDC Website

Research links thyroid cancer and radiation emissions from nuclear plants.

- Nuclear plants, including Limerick, routinely release radioactive iodine.
- Radioactive iodine attacks the thyroid gland, a fact confirmed by the potassium lodide pills issued to residents within 10 miles of a nuclear plant to protect the thyroid in case of an accident or terrorist attack.
- Thyroid cancer is one of the most radiation-sensitive cancers. Radioactive iodine released from nuclear plants seeks out the thyroid gland and destroys its cells.
- A 2009 scientific article reported a thyroid cancer epidemic in a small 90-mile radius encompassing eastern PA, central New Jersey, and southern New York, where 16 reactors are located, including Limerick.

Counties Most Impacted By Limerick Nuclear Plant's Radioactive Emissions

Thyroid Cancer Rates

Are Far Higher Than National Average

Montgomery

56.2% Higher THAN U.S.

Chester

53.9% Higher THAN U.S.

Upwind

Berks

14.6 % Higher THAN U.S.

Thyroid Cancer Rates Are Far Higher Than The National Average In Counties Most Impacted By

Limerick Nuclear Power Plant

Evidence suggests the closer you live to Limerick Nuclear Plant's routine and accidental radioactive emissions, the more risk you have of getting Thyroid Cancer.

Counties Closest and Downwind from Limerick

Montgomery County 56.2 % HIGHER THAN U.S.

Chester County
53.9 % HIGHER THAN U.S.

County Upwind from Limerick

Berks County 14.6 % HIGHER THAN U.S.

Thyroid Cancer Incidence Rate 2001-2005

Counties Within 20 Miles Of
Limerick Nuclear Power Plant, Pottstown, PA

County/State	2008 Pop.	<u>Cases</u>	100,000 Pop.	95% CI	% Above US
Montgomery PA	778,048	565	13.9	12.8 - 15.1	+ 56.2
Chester PA	491,489	325	13.7	12.2 – 15.2	+ 53.9

January 21.2009

Press Event: Thyroid Cancer Link With Nuclear Reactors

Statement From: Dr. Lewis Cuthbert, President (610) 326-2387
Alliance for a Clean Environment, Pottstown PA

ACE Is Extremely Concerned About Environmental Health Hazards

- The Alliance For A Clean Environment is a tri-county grassroots group with more than 1,000 members in the region of Limerick Nuclear Power Plant.
- For 15 years, we have compiled research and data on links between hazardous emissions into our air, water, soil, from major polluters like Limerick Nuclear Plant, and the alarming rising rates of cancer and other environmentally related diseases and disabilities in our region's residents.
- Joseph Mangano's research validates our findings through anecdotal reporting.

Rising Thyroid Cancer Rates Are Shocking Since Limerick Nuclear Plant Started To Operate. Anecdotal Reports Suggest Thyroid Diseases Are Also Rampant Around Limerick Nuclear Plant.

- Through ACE educational outreach on local cable TV, radio, and opinion newspaper articles, vast numbers
 of people have contacted ACE reporting thyroid diseases
- ACE did a health survey which also revealed alarming numbers of thyroid diseases.
- Statistics show shocking thyroid cancer increases in Montgomery County, home of Limerick Nuclear Plant, since Limerick started operating in the mid 1980's.

Limerick Nuclear Power Plant is in a highly populated and growing area, only 20 miles from Philadelphia. We have long been concerned about the inability to safely evacuate after an accident or terrorist attack at Limerick Nuclear Plant, but that is not the only risk. We are even more concerned about Limerick's routinely released radioactive chemicals which we believe are a major factor in causing actual cancers in vast numbers of the region's residents.

- Limerick Nuclear Power Plant has routine and accidental radiation releases. ACE compiled evidence proving that. The predominant wind direction is toward Philadelphia.
- · Radioactive poisons released by Limerick get into our air, soil, water, food, and our bodies.
- The industry makes unsubstantiated claims that doses are so small they won't hurt us. Nuclear industry claims are not only-unsubstantiated, they are not true, according to the National Academy of Sciences,

ACE fully supports and highly commends Joseph Mangano's article, as we do his most recent well researched and informative book: *Radioactive Baby Teeth: The Cancer Link.*

• Tina Daly, from the Pennsylvania Environmental Network, is also here today to express support and appreciation for Joseph Mangano's research. This has statewide implications for far vast numbers of PA residents, impacted by too many nuclear plants in PA.

This is about the health of all families around nuclear plants and the health of future generations. ACE Calls For Disclosure, Accountability, and Precaution. To protect public health, we must have a higher level of understanding, disclosure, accountability, and precaution from our regulatory and health agencies.

ACE calls on regulatory, health, and elected officials, to use the RPHP study to take the most precautionary approach to all decisions involving nuclear power plants and radiation exposures from them. Citizens from Philadelphia and the entire region must demand higher levels of accountability and protection from all agency and elected officials.

Letter to Editor

For thirty years I lived near Limerick Nuclear Power Plant. In 2006, I was diagnosed with thyroid cancer and wanted to know why. There was no thyroid cancer in my family. I had no other health problems at the time of my diagnosis. A Limerick official confirmed that many people had thyroid problems in Limerick.

After 9/11, I went to a meeting at Limerick Fire Company. They told us to take Potassium Iodide pills to protect our thyroid in case of a terrorist attack or accident at Limerick Nuclear Plant. If that isn't a connection, what is? Limerick Nuclear Plant has routine radiation emissions. Even if the dose is low as claimed, we're continuously exposed.

Cancer registry statistics also suggest a link. Thyroid cancer drastically increased by 128% in Montgomery County from the time Limerick Nuclear Power Plant started operating to the mid 1990s. By the late 1990s it was 75% higher than the national average. What gives the nuclear plant a right to continuously poison our air with radiation that can lead to so much pain and suffering for so many?

If not for being exposed to Limerick's radiation emissions for over 20 years, would I have ended up with thyroid cancer, an extended stay in the hospital, months of painful rehabilitation, weakened bones, and many other agonizing complications? I don't think so. I even had to retire from my job.

Recently, I attended a press conference at Philadelphia City Hall, which confirmed what I already believed to be true, that living near Limerick Nuclear Power Plant caused my thyroid cancer. I'm thankful for the thyroid cancer research by Joseph Mangano, Radiation and Public Health Project Director. Thyroid cancer victims like me need their beliefs confirmed.

Hopefully, this research will lead to prevention, and fewer people will have to suffer the ravages of thyroid cancer, like I did. Residents around nuclear plants elsewhere were informed by their local media. I'm disappointed that the Mercury and Times Herald didn't inform this region's residents.

Speak out for actual prevention to protect your family. Detection and treatment are not the same as stopping what is causing cancer. For information on important research about the thyroid cancer epidemic around nuclear plants, including Limerick, go to www.radiation.org.

Eileen Collis Previously lived next to Limerick Nuclear Plant Now living in Douglassville, PA

THYROID CANCER EPIDEMIC FOUND IN EASTERN PENN. RADIATION FROM NUCLEAR PLANTS LINKED WITH DISEASE

Philadelphia, January 21, 2010 - Pennsylvania has the highest thyroid cancer rate of any U.S. state, and rates are especially high in the eastern part of the state, which has a large concentration of nuclear reactors, according to a new study released today.

From 2001-2005, the Pennsylvania thyroid cancer incidence rate was 44% above the U.S., according to data from the U.S. Centers for Disease Control and Prevention. Of the 18 U.S. counties with the highest rates, six are located in eastern Pennsylvania. There are 9 nuclear reactors in this area, the largest concentration in the U.S.

"Epidemic levels of thyroid cancer in eastern Pennsylvania suggest that radiation emitted by reactors may be driving up rates among local residents," says Joseph Mangano MPH MBA "because exposure to radiation is the only known cause of the disease." Mangano is Executive Director of the Radiation and Public Health Project research group, and author of the article published in the current *International Journal of Health Services*.

The research found that in the mid-1980s, Pennsylvania's thyroid cancer rate was 40% below the U.S. "Something occurred to change Pennsylvania's rate from low to high," says Mangano "and one of these possible factors is radiation from reactors."

"The findings shocked me," says Suzanne Litzenberger, a 30 year old thyroid cancer survivor from Allentown. "The fact that Lehigh County has the highest rate of any county in the United States means we need to find what's causing the disease and take action to lower future rates." The 2001-2005 thyroid cancer rate in Lehigh County is 21.4 cases per 100,000 persons, or 140% above the U.S. rate of 8.9.

"This research is further evidence that nuclear energy is a biological hazard that we cannot afford," states Judith Johnsrud PhD. Dr. Johnsrud directs the Environmental Coalition on Nuclear Power in State College PA.

The thyroid is a butterfly-shaped gland around the throat that produces hormones essential to physical and mental growth. Thyroid cancer has no known cause, other than exposure to radiation, especially radioactive iodine produced only in atomic bombs and nuclear reactors. Iodine particles enter bodies from breathing and food, seek out the thyroid gland, and attack cells, leading to cancer and other disorders.

Thyroid cancer is the fastest-increasing cancer in the U.S. It's rate has nearly tripled since 1980, and is rising sharply for all races, ages, and genders. About 37,000 Americans will be diagnosed with the condition this year; over 70% are between age 20 and 60. In Pennsylvania, the number of new cases has soared from 401 in 1985 to 2220 in 2007.

The nine nuclear reactors in eastern Pennsylvania are at Susquehanna in Luzerne County (2); Three Mile Island in Dauphin County (2); Peach Bottom in York County (3); and Limerick in Montgomery County (2). Seven are still operating, while two have shut down (including the Three Mile Island 2 reactor that melted down in 1979).

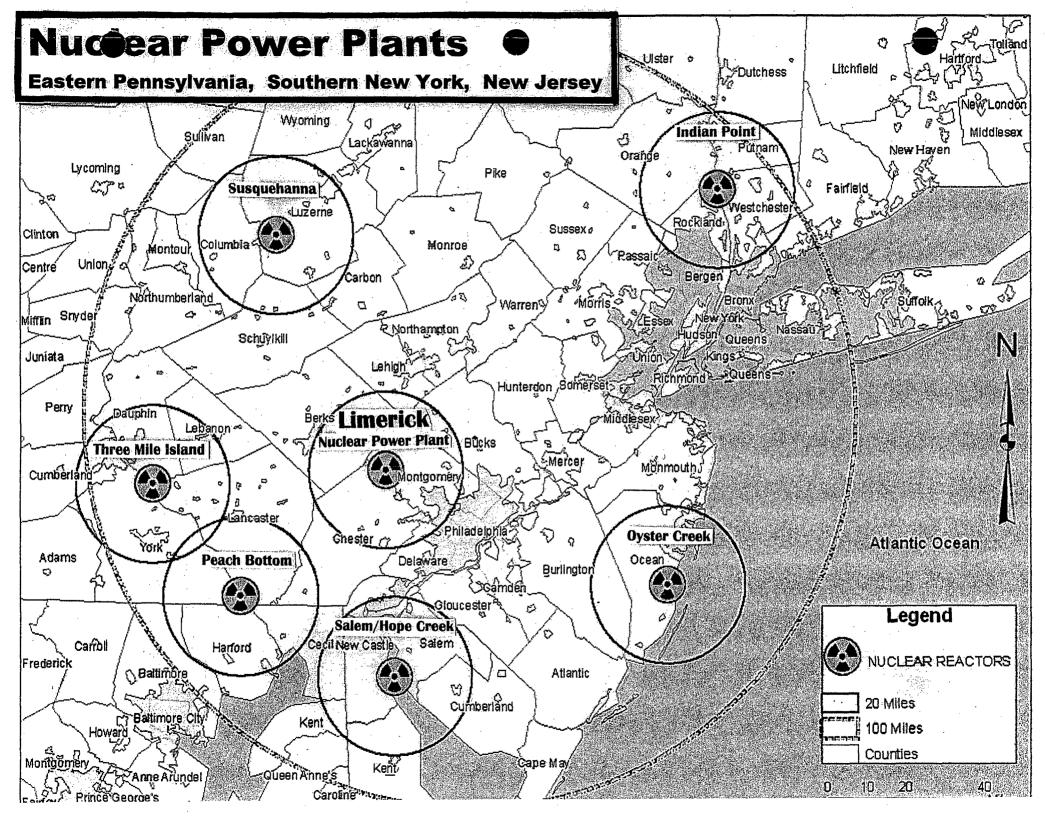
Reactors routinely emit low doses of radioactive iodine into local air and water. For decades, health authorities contended low dose exposures to radiation did not harm humans. But a 1999 study by the National Academy of Sciences found that up to 212,000 Americans developed thyroid cancer from radioactive iodine from above-ground atomic bomb tests in Nevada, which added low doses to the U.S. diet in the 1950s and 1960s.

New Jersey has the 5th highest thyroid cancer rate of all U.S. states. The three counties with the highest rates in the state are all in central New Jersey (Camden, Burlington, and Ocean). Ocean County is the site of the Oyster Creek nuclear reactor, which has operated for over 40 years, making it the oldest of the 104 U.S. reactors. Oyster Creek recently received authorization from federal regulators to operate for 20 more years.

The Radiation and Public Health Project is a non-profit research and education group of scientists and health professionals specializing in cancer risk from radiation exposure. The medical journal article on thyroid cancer is the 25th published by the group. Mangano says more studies on thyroid cancer and other thyroid disorders are planned.

Speakers at the event held at Philadelphia's City Hall included Mangano, Johnsrud, Litzenberger, and:

- Fred Winter MD, a Pottstown PA radiologist, and an expert in radiation health
- Lewis Cuthbert PhD, President, Alliance for a Clean Environment in Pottstown PA
- Matt Elliott, Associate with Environment New Jersey in Trenton NJ
- Eileen Collis, thyroid cancer survivor from Montgomery County PA
- Bonnie Polla, thyroid cancer survivor from Orefield PA



Samuel S. Epstein

Cancer prevention expert, professor emeritus at U. of IL School of Public Health, Chicago

Posted: August 4, 2009 02:02 PM

Nuclear Power Causes Cancer: What Industry Doesn't Want You To Know

Nuclear power, frequently mentioned as one option for meeting future energy needs, would pose a health threat to Americans if a meltdown occurred. But despite meltdowns at Chernobyl and Three Mile Island, and many other nearmiss accidents, there is another dirty little secret the nuclear industry doesn't want you to know. Cancer risk from nuclear plants aren't just *potential* risks, they are *actual* risks.

Every day, reactors must routinely release a portion of radioactive chemicals into local air and water — the same chemicals found in atomic bomb tests. They enter human bodies through breathing and the food chain. Federal law obligates nuclear companies to measure these emissions and the amounts that end up in air, water, and food, and to report them to federal regulators.

However, nuclear advocates consistently claim that these releases are below federally-permitted limits, and thus are harmless. But this thinking is a leap that ignores hard evidence from scientific studies. Now, after half a century of a large-scale experiment with nuclear power, the verdict is in: nuclear reactors cause cancer.

The claim that low doses of radiation are harmless has always been just a claim. It led to practices like routine diagnostic X-rays to the pelvis of pregnant women, until the work of the University of Oxford's Dr. Alice Stewart found that these X-rays doubled the chance that the fetus would die of cancer as a child. Many studies later, independent experts agreed that no dose is safe. A 2005 report by a blue-ribbon panel of the National Academy of Sciences reviewed hundreds of scientific articles, and concluded that there is no risk-free dose of radiation.

Federal health officials, who should be responsible for tracking cancer near nuclear reactors and analyzing their nuclear contaminants, have ignored the dangers. The only national analysis of the topic was a 1990 study mandated by Senator Edward Kennedy, and conducted by the National Cancer Institute. But this study was biased before it even got started. A January 28, 1988 letter to Senator Kennedy from National Institutes of Health Director Dr. James Wyngaarden brazenly declared "The most serious impact of the Three Mile Island accident that can be identified with certainty is mental stress to those living near the plant, particularly pregnant women and families with teenagers and young children." Not surprisingly, the study concluded there was no evidence of high cancer rates near reactors. No updated study has since been conducted by federal officials.

With government on the sidelines, it has been up to independent researchers -- publishing results in medical and scientific journals, to generate the needed evidence. Studies were limited until the 1990s, but the few publications consistently documented high local cancer rates near reactors. Dr. Richard Clapp of Boston University found high leukemia rates near the Pilgrim plant in Massachusetts. Colorado health official Dr. Carl Johnson documented high child cancer rates near the San Onofre plant in California.

Columbia University researchers showed that cancer cases within a 10 mile radius of the Three Mile Island plant soared 64% in the first five years after the 1979 meltdown. Following the federal government's party line, they claimed that "stress" rather than radiation caused this increase. But the cat was out of the bag. Dr. Steven Wing of the University of North Carolina published a paper using the same data confirming the radiation-cancer link.

Joseph Mangano, MPH, MBA, Executive Director of the <u>Radiation and Public Health Project</u>, has authored 23 scientific articles since the mid-1990s documenting high local cancer rates near nukes. One study showed child cancer exceeded the national rate near 14 of 14 plants in the eastern U.S. Another showed that when U.S. nuclear plants closed, local infant deaths and child cancer cases plunged immediately after shutdown.

Other publications by Mangano have shown rising levels of radioactive Strontium-90, emitted by reactors, in baby teeth of children living near reactors, which were closely linked with trends in childhood cancer rates.

The young aren't the only ones affected by reactor emissions. New evidence has examined adult rates of thyroid cancer, a disease especially sensitive to radiation. Thyroid is the fastest-rising cancer in the U.S., nearly tripling since

1980. This evidence proves that most U.S. counties with the highest thyroid cancer rates are within a 90-mile radius covering eastern Pennsylvania, New Jersey, and southern New York. This area has 16 nuclear reactors (13 still in operation) at 7 plants, the densest concentration of reactors in the U.S.

A November 2007 article on U.S. child leukemia deaths updated the 1990 National Cancer Institute study and showed local rates rose as nuclear plants aged -- except near plants that shut down.

A nationwide study of current cancer rates near nukes is sorely needed. In May this year, the U.S. Nuclear Regulatory Commission (NRC) quietly announced it was commissioning an update of the 1990 National Cancer study. This sounds like a positive step. However, the NRC has long been a harsh critic of any suggestion that reactors cause cancer. This is not surprising, since the Commission receives 90% of its funds from nuclear companies that operate reactors.

Rather than ask for competitive bids for the cancer study, the NRC simply handed the job to the Oak Ridge Institute for Science and Education. Oak Ridge is an Energy Department contractor in the city that has operated a nuclear weapons plant for over half a century. The "Institute" is merely a front for pro-nuclear forces. It has no record of publishing scientific articles on cancer rates near reactors. The whitewash is on.

Several steps must be taken urgently. President Obama, who will appoint replacements for 2 of the 5 NRC commissioners later this year, should select independent members — not the yes men for the nuclear industry who have run the NRC for so many years. The NRC should bow out of the cancer study. Finally, Congress should appropriate funds supporting a truly independent study on cancer rates near U.S. reactors. The American public deserves to know just what these machines have done to them, so that future energy policies will better protect public health.

Samuel S. Epstein, M.D. is professor emeritus of Environmental and Occupational Medicine at the University of Illinois at Chicago School of Public Health; Chairman of the Cancer Prevention Coalition; and author of over 200 scientific articles and 15 books on cancer, including the groundbreaking 1979 The Politics of Cancer, and the 2009 Toxic Beauty.

STATE DATA SHOWS

"DISTURBING NUMBERS"

For

INFANT

And

NEONATAL MORTALITY

In The Greater Pottstown Area

FAR ABOVE STATE AVERAGE

Even Surpasses Cities Like Philadelphia And Reading.

Reported October 5, 2003

- 1. New Articles Reported Concern About High Infant Mortality Since 1997 By 2003, Infant Mortality Rates Remained Far Higher Than The State Average, and Were Far Higher Than Philadelphia and Reading.
- 2. Infant Mortality Has Been Linked To Radiation Exposure Limerick Nuclear Power Plant started releasing radiation into our air, water, and soil in the mid 1980s.
- 3. Lifestyle Alone Does Not Account For Such High Continuing Infant Mortality Rates Compared to the State, Philadelphia, and Reading.

INFANT MORTALITY AND NEONATAL MORTALITY

BASED ON STATE HEALTH STATISTICS EPA REPORTED IN 2003

"DISTURBING NUMBERS"

AROUND

LIMERICK NUCLEAR PLANT

"FAR ABOVE STATE AVERGE"

NUMBERS EVEN SURPASS
PHILADELPHIA AND READING

A PULITZER PRIZE-WINNING NEWSPAPER.

Too many baby deaths in Pottstown

"This is embarrassing. This county is too wealthy and too educated to have this happen. For a county this wealthy we need to do better. 37

James W. Maza

By CARL HESSLER JR. Mercury Staff Writer

NORRISTOWN - Despite health department efforts to curb infant deaths in Pottstown during the last several years, Pottstown continues to have a higher than average infant mortality rate.

And those babies born to black mothers are dying more often than babies born to white mothers.

"This is embarrassing. This county

have this happen. For a county this wealthy we need to do better." Democratic commissioner James W. Maza said when confronted with infant mortality statistics.

According to statistics compiled by the Montgomery County Health Department, the Pottstown area averaged 7.9 infant deaths for every 1,000 live births between 1987 and 1996, the last year for which statistics are avail-

is too wealthy and too educated to able. The Pottstown area includes Pottstown, Lower Pottsgrove, Upper Pottagrove and West Pottagrove.

Overall, the countywide infant mortality rate (deaths of children under age 1) during the same time period was 7.0. The white infant mortality. rate countywide was 6.2 and the black infant mortality rate was 15.2.

The statistics indicated that in the Pottstown area, the white infant mortality rate was 6.8 deaths per 1,000 live births between 1987 and 1 while the black infant mortality : was 15.1 per 1.000 live births.

Robert Gage, director of the cou health department, said health offic have been working intensely since 1 to try to decrease the infant morts rates. The department has a progr where public health nurses v Pottstown area pregnant women to

(See INFANT MORTALITY on AS

Low-Level Radiation Exposure and Elevated Infant Mortality Is There A Link In Pottstown?

- Hiroshima and Nagasaki data show children and infants are more sensitive to the effects of low levels of ionizing radiation.
- Data collected from Chernobyl show from monitoring stations as far as 9,000 miles away that infant mortality rates rose after the accident. Researchers suggest that EPA limits on exposures to low level radiation may need to be tightened by as much as a factor of 1000.
- Infant mortality rates rose after the rod meltdown in Sayannah River, Georgia.
- Infant mortality rates also rose after the Three Mile Island accident where people received only low doses of radiation.

The cumulative weight of this data collected on affected populations is persuasive enough to call for PRECAUTION!

In Pottstown, far too many infant deaths

(INFANT MORTALITY from A1)

2/28/99

them into prenatal care as soon as possible.

"We have to do more," Gage admitted, adding however, that the local statistics mirror trends in the nation and the state. "We are attempting to muster more resources. We have been focusing on Pottstown and Norristown, on the Census tracks at highest risk."

The comissioners have asked Gage and other health officials to submit a report within two weeks to explain the reasons for the high infant mortality rates in the boroughs of Pottstown

and Norristown and to suggest solutions.

"This isn't good enough. We have a long way to go in this county," Maza said. "If it is a problem of money, then I want to address what we can do to remedy that. It may not be just money."

Walter Tsou, deputy director of the health department, pointed out that Norristown continues to have the highest infant mortality rate in the county and Norristown ranks fifth in the state in infant mortality. From 1994 to 1996, the infant mortality rate in Norristown was 17.9, with the white infant mortality rate at 18.3 and the black infant mortality rate at 18.9.

Norristown's infant mortality rate is twice the county average.

"There are geographic segments of our county where the rates are higher," Tsou said.

But in Norristown, the mortality rate has increased over the years, despite outreach efforts there. Between 1990 and 1992,

Average Annual Infant Mortality Rate per 1,000 live births, Pottstown Area, 1987-1996

Year	All Races	Whites
15/1987/1990	8/4	6.77
1988-1992	8.9	7.7
3 J1989-1993	8.2	8.03
1990-1994	7.1	6.7
£ 1991-1995; £	7.0	7.0 C
1992-1996	7.5	6.8

Average annual infant mortality rate 1987-1996 15.1 per 1000 live births - black

Pottstown area = Pottstown, Lower Pottsgrove, Upper Pottsgrove, and West Pottsgrove

Source: Montgomery County Health Department
PA Department of Health
National Center for Health Statistics

Mercury Graphic by C.D. Six

Norristown's overall infant mortality rate was just 12.9 and that climbed to 17.9 during the period 1994-96.

"The numbers are going up substantially instead of going down. We must not be doing something right," Republican commissioner Mario Mele said. "These numbers are very alarming. We need to get more proactive with the community to let people know resources are there to help them."

But Tsou said the news isn't all bad.

"The good news for Montgomery County is that our infant mortality is better than state and national statistics," Tsou said.

Tsou said the county is already below the federal year 2000 objective of 7 infant deaths per 1,000 live births. In 1996, the county's overall infant mortality rate was about 5.7 and Pennsylvania's infant mortality rate was about 7.6.

Infant mortality rates, Tsou said, tend to be closely associated with low birth weight and a mother's access to proper prenatal care.

"Low birth weight is the most important predictor of infant mortality," Tsou said.

The year 2000 goal in the nation is that only 5 percent of all babies born should be of low birth weight. In 1996, about 8.5 percent of all babies born in the county were of low birth weight.

The goal in the year 2000 is to have at least 90 percent of all pregnant women receive prenatal care during the first trimester of pregnancy. In 1996, about 9 percent of all pregnant county women did not initiate prenatal care in the first trimester, including 7.2 percent of white mothers and 28 percent of black mothers.

Even more alarming, Tsou said, is that 30 percent of pregnant Norristown women didn't receive prenatal care during the

first trimester in 1996,

"Young people, 45 percent of teen agers under age 20, did not initiate prenatal care," Tsou said, "As you get older, you get wiser and you get prenatal care."

Borough's baby death rate fuels 'concern'

By CARL HESSLER JR. Mercury Staff Writer

10/13/97

NORRISTOWN — Pottstown has a higher than average infant mortality rate and those bables under 1-year-old born to black mothers are dving more often than their white counterparts, according to Montgomery County health officials.

"It's mostly because of the socio-economic backgrounds and educational levels that (the inlant mortality rate) is higher than average in Polistown," said Anita Crielly, director of clinical services for the health department.

According to a child health needs assessment report released this month by the health department, between 1986 and

1995. Pottstown averaged 9.7 infant deaths, countywide during the 10-year period for every 1,000 live births.

In comparison, there were 6.1 infant deaths for every 1.000 live births countywide in 1995.

was better than than that in Norristown. where 15.2 infants died for every 1.000 live births over the 10-year period between 1986 and 1995.

"It's causing us some concern. We have work to do in those areas," said Crielly, referring to the rates in Pottstown and Norristown.

to have higher than average infant mortality rates, overall, infant mortality rates declined (See INFANTS on A4)

from 7.8 infant deaths per 1.000 live births in 1986 to 6.1 infant deaths per 1,000 live births in 1995.

Crielly said the county is below the feder-Still the infant mortality rate in Pottstown all health goal for infant mortality for the year 2000, which is seven deaths for every 1.000 live births.

> "Overall, it looks like we are meeting the year 2000 objectives. But when you break it out by race, we found that the black race has a really high infant mortality rate." Crielly said.

In 1995, 18.4 black infants died for every While Pottstown and Norristown continue 1,000 live births in the county, Granted, that

Borough's baby deaths are fueling 'concern'

(INPANTS from A1)

is a decrease from the all-time high rate of 25.4 black infant deaths per 1,000 live births in 1988, but still higher than the federal health goal of 11 deaths for every 1,000 live births by the year 2000. Crielly said.

In comparison, 5.1 white infants fied for every 1,000 live births luring 1995, according to the tudy.

Crielly said efforts to curb plack infant mortality must inensify in the next few years if the ounty is going to meet the year 000 goal.

Crielly said the mortality rates end to be closely tied to low irth weight and a mother's acess to proper prenatal care.

"We believe that a woman should be seen at least once by an obstetrician in her first trimester of pregnancy," Crielly said. "One of the most important things a woman can do to ensure good health outcome from a pregnancy is prenatal care."

Health officials said the year 2000 goal is to have at least 90 percent of all pregnant women receive prenatal care in the first three months of pregnancy.

The study found that 90.4 percent of new mothers in 1995 did initiate prenatal care in the first three months of pregnancy.

"But a lot of poorer women are not in contact with a doctor during the first three months," Criefly said.

Only 72 percent of new mothers in Pottstown receive prenatal care in the first three months and only 71 percent of new mothers in Norristown receive prenatal care. according to the study.

Once again, the racial breakdown produces disturbing statistics, Crielly said.

About 30 percent of new black mothers countywide delayed their prenatal care in 1995 while only about 10 percent of white mothers delayed their prenatal care in the first trimester.

Officials said women cite a lack

of transportation and a lack of come women. The outres insurance coverage as the major workers can help women ovbarriers to receiving timely come such barriers as lack prenatal care.

said health officials will focus prenatal care. their educational efforts toward minority women in the geographical areas, such as Pottstown and officials will also provice Norristown, where there are high prenatal care information infant mortality rates.

workers going into the com- screenings at homes in the cour munities at welfare and WIC by. (Women and Infant Care) offices to provide information about prenatal care to pregnant women," Crielly said.

to sign up for prenatal care programs or the health department's home visiting program, under which the county's public health nurses visit the homes of low-in. comes, officials said

transportation or day care s: To reverse the trends. Crielly vices in order for them to obta

Crielly said health departme pregnant women they meet while "We are going to have outreach conducting lead poisoning

Health officials also plan to educate women about the dangers of tobacco and alcoho The women will be encouraged; use during pregnancy. Smoking it closely associated with low birt weight and drug and alcoho: abuse among pregnant womer can lead to poor pregnancy out

The National Committee To Stop Environmental Pollution 214 3rd Street NE Washington, D.C. 20002

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Copy

FOR RELEASE: 12 noon

Oct. 21 1970.

SCIENTIST CHARGES NUCLEAR POWER PLANT RESPONSIBLE FOR 2500 INFANT DEATHS

Harrisburg, Pa. October 21 -

Evidence that the Presden, Illinois, nuclear power plant's normal operation has been the cause of the death of 2500 children was introduced today in a public hearing before a Pennsylvania Senate Select Committee.

In reviewing public health data, Dr. Ernest J. Sternglass, a Professor of Radiology in the Division of Radiation Health, University of Pittsburgh, told eight senators who are weighing a moratorium on nuclear power plants in the Commonwealth, that radioactive gaseous wastes from the 180 megawatt reactor, 50 miles southwest of Chicago, were involved in the excess deaths of the children who lived in the counties downwind of the Dresden site. The count included all infants who failed to survive the first year of life.

The Senate Committee, chaired by Senator Edwin G. Holl, heard Dr. Sternglass describe the effects of low doses of radioactivity at an earlier hearing on August 20. This new data, Dr. Sternglass said, has just become available. He urged a tightening of emissions from nuclear plants because standards used by the Atomic Energy Commission were set before the greater susceptibility of women and children to ionizing radiation was recognized. Also, federal standards take no account of the biological reconcentration of some radicactive fission products, he said.

The scientist recommended that all boiling water type reactors be shut down to prevent further loss of life. He said this type of device, made by General Electric, sends up the stack 10,000 times more harmful gases than the naval submarine type reactor.

The Dresden reactor, he ar Morris, Illinois, has been in operation since 1959. The 2500 excess deaths were calculated for the 10-year period ending in 1968. The rise in deaths correlated exactly with rises in gaseous radioactive discharges, Dr. Sternglass claimed. Reports of the US Public Health Service of the Department of HEW were used in making the calculations.

Small boiling water reactors are in operation at Humboldt Bay, Eureka, California; Big Rock Point near Chadevoix, Michigan, and LaCrosse, Wisconsin.

Large reactors, three times the size of Dresden, have recently started up at Oyster Creek, New Jersey on Barnegat Bay; Nine-Mile Point near Oswego, New York; and Monticello, Minn. and New London, Conn. The largest reactor in the world is about to start operation right next to the Dresden plant.

There are other units nearing completion at Vernon, Vermont; Plymouth, Mass.; Browns Ferry, Alabama, and Rock Island, Illinois. Boiling water reactors are proposed for Monroe, Michigan; Briswick County North Constant Bayley, Constant Vernon, Vernont, Plymouth, Massey, Constant Vernont, Plymouth, Massey, Constant Vernont, Vernont, Plymouth, Massey, Constant Vernont, Vernont, Plymouth, Massey, Constant Vernont, Plymouth, Plymouth, Massey, Constant Vernont, Plymouth, Ply

Infant Death and Childhood Cancer Reductions After Nuclear Plant Closings in the United States.

Archives of Environmental Health; 1/1/2002; McDonnell, William

Subsequent to 1987, 8 U.S. nuclear plants located at least 113 km from other reactors ceased operations. Strontium-90 levels in local milk declined sharply after closings, as did deaths among infants who had lived downwind and within 64 km of each plant. These reductions occurred during the first 2 yr that followed closing of the plants, were sustained for at least 6 yr, and were especially pronounced for birth defects. Trends in infant deaths in proximate areas not downwind, and more than 64 km from the closed plants, were not different from the national patterns. In proximate areas for which data were available, cancer incidence in children younger than 5 yr of age fell significantly after the shutdowns. Changes in health following nuclear reactor closings may help elucidate the relationship between low-dose radiation exposure and disease

THERE IS A RELATIVE PAUCITY of research that documents the beneficial health effects to humans following a reduction in the level of **environmental toxins**. Existing data provide evidence for immediate responses, as well as for responses with longer latencies. Motor vehicle restrictions during the 1996 Summer Olympic Games resulted in a 28% drop in peak ozone concentration and a more than 40% reduction in asthma admissions/emergency room visits among Atlanta children. (1) The decline in smoking for U.S. adult males, from 52% in 1965 to 28% in 1990, (2) was not followed by a reduction in age-adjusted incidence of lung-bronchial cancers until 1984. (3)

Reduction of ionizing radiation in the environment, and hence in the food chain, occurred after enactment of the Partial Test Ban Treaty of 1963 that prohibited atmospheric atomic weapons testing by the United States, the (then) Soviet Union, and Great Britain. In the United States, dietary levels of short-lived isotopes, such as iodine-131 (I-131) and strontium-89 (Sr-89), with respective biological half-lives of 8 and 50 days, fell dramatically. Even concentrations of a long-lived isotope such as strontium-90 (half-life = 28.7 yr) in raw milk declined by one-half in 9 U.S. cities from the peak of April/May 1964 to November/December 1965. This decline, from an average of 30 to 15 picocuries per liter, fell further to 6 by 1970. (4,5)

Diminishing radioactivity levels in the diet were accompanied by immediate and significant morbidity and mortality reductions among infants and young children. U.S. infant deaths per 1,000 births fell from 24.7 to 19.1 from 1965 to 1971, respectively--a rate of decrease more than 4 times greater than for 1951-1965, (6) respectively. (Note: Atmospheric bomb testing in Nevada began in January 1951.7) Cancer incidence in children who were younger than 5 yr of age and who lived in Connecticut--the only U.S. state that operated a comprehensive tumor registry--dropped 30% from the 1962-1964 peak of 20.38 cases/100,000 to 14.21 by 1967-1969, following a 40% rise during the time of atmospheric bomb testing. (8)

Although most permanent shutdowns of nuclear power reactors are relatively recent, periods that follow unexpectedly large releases of airborne emissions offer an example of reduced environmental radioactivity. In the 1960s, declines in local infant mortality were documented after substantial reductions in gaseous emissions from several nuclear facilities. (9) In downwind areas within 64 km of 5 closed reactors, infant deaths declined at an unexpectedly rapid rate in the first 2 yr that followed closing. (10) We propose to extend that report by presenting data on all reactors for which post-shutdown data are currently available. Mortality 2 yr and 6 yr after reactor closings will be reviewed, the purpose of which will be assessment of whether immediate reductions are sustained over longer periods of time. Proximate areas that are not downwind from closed reactors and 64-129 km downwind will be examined. Finally, childhood cancer incidence trends near closed reactors will also be considered.

Method

Subsequent to 1987, 13 nuclear power reactors in the United States have been closed permanently. In addition, 5 other reactors have been nonoperational for at least 2 consecutive calendar years (see Table 1). The 8 regions in which closings left no operating power reactor within a 112-km radius of the closed facility are the focus of this report. Preliminary data have already been presented for 5 of the 8 regions. (10) Of these 8 regions, 6 have involved permanent shutdowns. The Pilgrim reactor in Massachusetts did not operate from April 1986 until late 1988. During the winter of 1995-1996, all 4 Connecticut reactors--3 at Millstone in Waterford and 1 in Haddam Neck, 29 km to the northwest--were closed. Millstone units 2 and 3 resumed operations in July 1999 and July 1998, respectively.

Demographic characteristics of the 8 areas are presented in Table 2. Population density varied greatly; some regions were urban settings, and some were sparsely populated areas. Poverty rates and percentages of Blacks and Hispanics in the population were less than the U.S. standard in each area.

An approximation of change in **environmental** radioactivity before and after a reactor shutdown may be observed with annual measures of Sr-90 in pasteurized milk, reported each July by the U.S. **Environmental** Protection Agency in 60 U.S. cities. (11) Readings for cities located within 64 km of closed reactors are also provided. The analysis of levels of long-lived Sr-90 has likely underestimated the reduction in **environmental** radioactivity inasmuch as short-lived isotopes emitted by reactors would no longer be present after a shutdown.

Short-lived airborne radioactive particulates often decay before entering the food chain. However, they can enter the body through inhalation. Persons with the greatest uptake from this vector are those who live downwind from the source, inasmuch as prevailing winds carry the majority of particles in the downwind direction. Longer-lived isotopes can also be inhaled, but they are also returned to earth by precipitation, after which they are again consumed in the diet. Again, levels are most likely highest in downwind, rainy areas. This principle is illustrated in the patterns of fallout from atmospheric atomic bomb tests in Nevada. For example, after the large "Smoky" test on August 31, 1957, U.S. government officials documented elevated levels of radioisotopes in raw milk. The typical concentration of Sr-89 (< 5 picocuries/l) was exceeded in Cincinnati, Ohio (i.e., 150 picocuries/l); in New York (160 picocuries/l); in Sacramento, California (30 picocuries/l); in Saint Louis, Missouri (290 picocuries/l); and in Salt Lake City, Utah (120 picocuries/l). (12) The only upwind city--Sacramento--had the lowest concentration of Sr-89. In addition, the total in Salt Lake City (i.e., city closest to Nevada) was exceeded by the much rainier Cincinnati (Ohio), New York, and Saint Louis (Missouri) areas.

Given that airborne radioactive particulates are propelled by prevailing winds, in this analysis we focused on counties located downwind and mostly or totally within 64 km of the closed reactors. Prevailing wind directions for the large city or cities nearest to each closed reactor were used. (13) Winds in Portland, Oregon--near the closed Trojan reactor--emanate from the east-southeast and northwest during 6 individual months; therefore, "downwind" counties are situated in both directions.

Infant deaths that occurred during the first year of life were obtained from the National Center for Health Statistics. County-specific deaths and population information were available on the world wide web (http://www.cdc.gov/data and statistics/CDC Wonder). The accuracy of the count of infant deaths is likely very high; all U.S. states have reported death data to the federal government, subject to reliability tests since 1933. Coding the reason for death should also be consistent over time; the 9th revision of the International Classification of Diseases (ICD) coding system was used for the classification of all deaths from 1979 to 1998. The county of residence for an infant death (i.e., mother's residence) has been a standard data element collected in the hospital medical record for many years.

Infant mortality rates before and after reactors ceased operations were compared. The period before a reactor is closed is defined as the last 2 yr of operation, including the year of closing. For example, the LaCrosse reactor ceased operations on April 30, 1987; therefore, the "before" period of operation is 1986-1987. Given that cellular damage from radioactive exposures is most pronounced in the fetal period, many births that followed the closing of a reactor (but in the same year) were subject to exposures from reactor operations prior to birth. Rates for the 2 yr before closing are contrasted with rates for the subsequent 2- and 6-yr periods.

The report also reviewed infant mortality from congenital anomalies (ICD codes 740.0-759.9) known to be sensitive to the effects of radiation. Approximately 1 of every 4 deaths in the first year of life results from a birth defect. Approximately one-half of the infant congenital anomaly deaths involves heart defects.

Chromosomal defects (including Down's, Edwards', and Patau's syndromes), and nervous system defects (including anencephalus and spina bifida) account for another quarter of deaths. (6)

Childhood cancer data were also analyzed because of the increased sensitivity of the developing fetus to the carcinogenic effects of ionizing radiation. Cancer incidence data were available only from state registries of California, Colorado, and Wisconsin. These states operated comprehensive tumor registries before and after closings (i.e., reporting of cancer cases was mandated by state law, reporting originated from several sources, and the reporting system was complete and accurate). Cases diagnosed before an individual's 5th birthday, which likely represented a fetal origin, were analyzed.

Trends in infant mortality near closed nuclear facilities were compared with U.S. patterns. Aggregated data (1e., 1988-1996) from states and cities that made up approximately 47% of the U.S. population were used for cancer incidence because no national registry exists. (Areas include the states of California, Connecticut, Florida, Hawaii, Iowa, Massachusetts, New Jersey, New Mexico, New York, Pennsylvania, Utah, and Wisconsin; and the Standard Metropolitan Statistical Areas of Atlanta, Denver, and Seattle.) Infant mortality and childhood cancer trends in counties near nuclear plants were also compared with all other counties in the state. For Millstone, "other state" represents Connecticut and Rhode Island combined, whereas for Trojan, "other state" represents Oregon and Washington combined.

Results

Change in **environmental** radioactivity. Sr-90 concentrations in pasteurized milk over a 12-yr period before and after shutdown were available for 3 cities within 64 km of closed nuclear plants. These were compared with trends in 23 U.S. cities for which an annual reading was reported each year from 1983-1994 (Table 3). In each area near a closed reactor, the average Sr-90 concentration fell by more than the U.S. decline (67.1%, 48.0%, and 47.1%, compared with 34.0%). This comparison was hampered by the availability of only 1 annual measurement, thus raising the chance of random fluctuation.

Infant mortality---all causes. Infant mortality in each of the 8 downwind areas decreased during the first 2 yr following closing (Table 4). Each decline exceeded the U.S. average 2-yr reduction of 6.4%, and the total decline of 17.4% was significant (p < .01). Each decline also exceeded the trend for other counties in the state; the total reduction in other counties of 6.7% was significantly different from the "nuclear" counties (p < .01).

Infant mortality data for 6 yr post-shutdown were available for counties near 4 of the 8 plants; the other plants closed too recently or they were re-started (Table 5). In each of the 4 areas, reductions continued to exceed the U.S. standard, and the total decline of 26.9% was significantly greater than the national trend (p < .0001). Reductions near the Rancho Seco and Trojan plants were also significant. Rates also fell faster than in other counties in respective states.

Infant mortality--congenital anomalies. During the first 2 yr following reactor shutdown, infant deaths from congenital anomalies declined 22.4%, compared with an average 2-yr decline in the U.S. of 5.5% (p < 05) and a total decline of 5.6% combined for other counties in the state where reactors were located. Declines in 7 of the 8 areas exceeded that of the U.S.; declines in 6 of the 8 areas exceeded those of other counties in the state (Table 6). During the first 6 yr following the closing of the reactor (for the 4 areas for which data were available), declines near each reactor continued. The change near the Trojan reactor in Oregon is significant, compared with both the U.S. and other counties in Oregon and Washington (Table 7).

Infant mortality--downwind 64-129 km from the plant. Infant mortality in downwind counties located 64-129 km from the closed reactors rose near 5 of the 7 plants (the area downwind from the Pilgrim reactor is the Atlantic Ocean). The overall increase of 5.4% was not significantly different from the 6.4% average national decrease. The 39.3% rise near the Rancho Seco reactor was significant at p < .01 (Table 8).

Infant mortality--counties not downwind. In 6 of 8 regions, reductions in infant mortality rates occurred in the first 2 yr following shutdown in non-downwind counties located less than 64 km from closed facilities. However, none of the reductions were significant, and the combined change of 7.1% was equivalent to the average U.S. 2-yr decline (Table 9).

Incidence--childhood cancer. In the states that operated comprehensive cancer registries at the time of reactor shutdown, incidence of newly diagnosed cancers in children under age 5 yr declined in downwind counties within 64 km. The decline measures the 2 yr prior to closing with 7 yr post-shutdown. The total reduction of 25.0% was significantly different from the stable U.S. trend (p < .005) and from the trend in other counties in the state (p < .006) (Table 10). The reduction near the Rancho Seco plant in California was significant, compared with the reduction in the United States (p < .02) and in the remainder of the state (p < .004).

Discussion

Research on changes in health in populations exposed to reduced levels of radioactivity has been scant. However, falling infant mortality and a decrease in childhood cancer immediately after atmospheric nuclear weapons testing was halted in 1963 suggest that "smaller" exposures may result in measurable improvements in health, especially in infants and young children.

In each of 8 areas downwind and proximate to closed nuclear power plants, infant deaths declined in excess of national trends during the first 2 yr following shutdown. Declines in mortality from congenital anomalies among local infants were particularly sharp. These trends were consistent for 2-yr and 6-yr periods after plant closings. Although declines near each reactor have fallen short of statistical significance, the possibility that similar trends should occur in each area by random chance is low.

The unexpectedly large decline in infant mortality occurred only in downwind counties that were located less than 64 km from closed nuclear facilities. Nondownwind counties located less than 64 km from reactors have nonsignificant declines in infant deaths. In downwind counties located 64-129 km from the plants, infant death rates increased, but the increases were not significant. Therefore, any beneficial effect of reactor shutdowns may apply only to the closest downwind counties. This finding illustrates the importance of analyzing the health of populations that live near nuclear facilities by direction, rather than as a whole. It also suggests that inhalation of airborne radioactive gases and particles, by which process the fetus absorbs radioactivity through the placenta, (14) may be a significant vector of exposure, along with dietary intake.

Cancer diagnosed in children under the age of 5 yr was also reduced in proximate downwind counties with available data. This trend is meaningful because it takes into account disease incidence, which cannot be affected by life-saving technological innovations, and may, therefore, be a more sensitive indicator of radiation effects than mortality.

No demographic characteristic predisposes these areas to health improvements. Reduced infant mortality rates occurred in both rural and urban regions. The relatively small proportions of minorities and poor individuals should not affect short-term changes inasmuch as it is unlikely that the racial distribution of studied counties changed appreciably in 2 yr. In addition, during the 20th century, improvements in infant health have yielded relatively equal benefits for all races and socioeconomic classes (i.e., similar reductions in infant mortality have occurred for all races).

The data support prior research that has shown that in utero exposures to radioactivity are most deleterious given the heightened sensitivity of the developing fetus and newborn infant. In the United States, infant deaths have been linked to exposure to fission products from atmospheric weapons tests. (15) In both Germany (16) and the United States, (17) increases in infant mortality have been attributed to fallout from the 1986 Chernobyl accident. Increased incidences of various congenital malformations have been documented in several European nations after Chernobyl (18-21) Elevated rates of childhood cancer near U.S. nuclear reactors have also been reported. (22-24)

In addition to reduced exposures to fission products, there may be other explanations for the decline. One such possibility is a demographic shift (i.e., closing of a nuclear power facility results in loss of employment for plant workers, who leave the area in search of work). Although some nuclear workers remain after reactors are closed to assist in deactivating the plant, many, in fact, lose their jobs. The processes of operating a reactor and deactivating it are distinctly different.

Some evidence, however, suggests that this population shift may not account for the unexpectedly large infant death and childhood cancer decreases in their entirety.

- 1. Nuclear plant workers are generally healthier than other workers of childbearing age. They are sufficiently healthy to hold full-time jobs, and their employer-based health insurance allows them access to medical care (including prenatal care--an important determinant of infant mortality risk). Thus, any departure of these workers from a downwind county after reactor closing would leave a higher-risk population than existed prior to closing of the reactor.
- 2. In urban areas, such as Sacramento, California, and Portland, Oregon, workers at the nuclear plant likely represent a small percentage of the overall workforce, and they have little impact on the postclosing infant death and cancer rates. Even in rural areas, numbers of live births did not decline rapidly following the closure of the reactor.
- 3. Workers are as likely to live upwind as they are to live downwind from the plant; however, consistent improvements in infant health occurred only in downwind areas.
- 4. Two of the plants were closed only temporarily. They did not lay off large numbers of workers, yet disease and death trends were similar to those obtained for the permanently closed reactors.

Whereas a substantial lag period between exposure and disease manifestation may be observed for adult cancers exposed to external x-rays, a much shorter lag period has been documented for very young individuals. Pelvic x-rays administered in utero are linked with increased cancer deaths before an individual's 10th birthday, (25) and 2/3 of these malignancies are diagnosed before the age of 5 yr. Thyroid cancer among children under 15 yr of age who lived near the Chernobyl facility began a sustained increase just 4 yr after the April 26, 1986, accident. (26-28) In 3 Pennsylvania counties located closest to the Three Mile Island facility, cancer deaths in persons under the age of 10 yr jumped from 28 to 36 in the 5 yr following the March 28, 1979, accident. (29)

A relatively short latency period that followed the addition of radioactivity raises the question of whether a similarly short lag exists between reduced exposures and declining disease rates. Short-lived airborne radioisotopes emitted from reactors are completely removed from the environment/diet within several months of the plant shutdown. Long-lived isotopes decay slowly, but existing data on dietary levels of Sr-90 suggest that these may be reduced substantially within several years after plant closing.

The data indicate that improvements in health occur after relatively slight reductions in dietary radioactivity. Sr-90 concentrations measured in milk samples in 9 U.S. cities fell from 30 to 15 picocuries per liter over an 18mo period following cessation of large-scale atmospheric nuclear weapons tests in the mid-1960s. In contrast, Sr-90 reductions in milk near closed nuclear reactors fell from approximately 1.0 to 0.5 picocuries after shutdown. Changes in health status after a relatively small reduction support the effects of low-dose exposures on laboratory animals. (30) In light of these data, the current understanding of the relationship between low-dose radiation exposure and disease should be reconsidered.

Several factors limit this study from being more meaningful. There is a dearth of research on health effects of reduced exposures to ionizing radiation and other toxic substances with which to compare results. Small population sizes in several of the areas near closed facilities make significant findings elusive. The 60 cities with federally reported dietary levels of radioactivity are often not proximate to nuclear sites. Moreover, routine reports of particular isotopes (e.g., barium-140, cesium-137, iodine-131, strontium-89) are no longer available. Reliance on annual strontium-90 levels in milk is a relatively basic measure of radiation burden on local residents. The use of weekly or monthly levels of a variety of isotopes (i.e., both short- and long-lived) would make dose estimates more meaningful. Moreover, given that locally consumed milk is often not produced locally, radioisotope concentrations in air and water would be useful.

The current report was based on aggregate data. In this report, we did not measure levels of radioactivity in the bodies of individual decedents or of infants who survived the first year of life. More dose information--not just in environmental/dietary levels--but in vivo, is needed. U.S. government programs that measure Sr-90 in deciduous teeth, children's vertebrae, and adult vertebrae were discontinued in the 1970s and early 1980S. (31) A recent project in which Sr-90 concentrations were measured in deciduous teeth of persons living near nuclear reactors indicated a link between Sr-90 levels and childhood cancer incidence. (32)

More research on how intrauterine exposure to radiation affects health in later life is critical in understanding effects of nuclear reactors. With more than 400 such facilities operating worldwide, such data can play a vital role in any program of disease prevention and health promotion.

Table 1.--U.S. Nuclear Reactors Closed Subsequent to 1987

Reactor name (locati		evailing wind direction *				
LaCrosse (Genoa, WI)	07/11/67 04/30/87	South (LaCrosse)				
Rancho Seco (Clay Station, CA)	09/16/74 06/07/89 CA)	Southwest (Sacramento,				
Fort St. Vrain (Platteville, CO)	01/31/74 08/18/89	South Denver, CO)				
Trojan (Prescott, OR)	12/15/75 11/09/92 (Port	East-southeast/ northwest land, OR)				
Maine Yankee (Wiscasset, ME!)	10/23/72 08/05/97	South (Portland, ME)				
Big Rock Point (Charlevoix, MI)	Sout	West-northwest (Sault Marie, IL) hwest ena, MI)				
	Temporary sh	utdowns .				
Haddam Neck (Haddam Neck, CT	07/24/67 	South (Hartford, CT)				
Millstone 1,2,3 (Waterford, CT)	10/26/70	Southwest (Providence, RI)				
Pilgrim (Plymouth, MA)	06/16/72 04/30/86	Southwest (Boston, MA)				
Comparison of	Comparison of reactors closed subsequent to 1987					

Comparison of reactors closed subsequent to 1987 with physical locations of additional operating reactors located < 113 km from closed reactor specified

Reactor name (location)	Date closed
Handford-N (Richmond, WA)	02/01/88
Yankee Rowe (Rowe, MA)	10/01/91
San Onofre (San Clemente, CA)	11/30/92
Clinton (Clinton, IL)	Autumn of 1996
LaSalle County 2 (Seneca, IL)	Autumn of 1996
Zion 1,2 (Zion, IL)	01/16/98

Cities located downwind 1990 Population
Reactor name (location) (< 64 km from closed (n) reactor)

LaCrosse	
(Genoa, WI)	ı

LaCrosse, WI Vernon, WI

97,904 25,617

Rancho Seco	Amador, CA	30,039
(Clay Station, CA)	El Dorado, CA	125,995
PI	acer, CA	172,796
Sa	acramento, CA	1,041,219
Fort St. Vrain	Larimer, CO	186,136
(Platteville, CO)	Weld, CO	131,821
Trojan	Columbia, OR	37,557
(Prescott, OR)	Clark, WA	238,053
Co	owl itz, WA	82,119
M	ultnomah, OR	583,887

Maine Yankee (Wiscasset, ME) Kennebec, ME

115,904

Knox, ME

36,310

Lincoln, ME

Wakhiakum, WA

30,357

3,832

Big Rock Point (Charlevois, MI)

Antrim, MI Charlevoix, MI 18,185 21,468

Cheboygan, MI Emmet, MI Otsego, MI

23,800 25,040 17,957

Temporary shutdowns

Haddam Neck (Haddam Neck, CT) Middlesex, CT New London, CT

254,957

Millstone 1,2,3 (Waterford, CT) Tolland, CT Windham, CT 128,699 102,525

Kent, RI Washington, RI

161,135 110,006

Pilgrim (Plymoutn, MA) Plymouth, MA

Comparison of reactors closed subsequent to 1987 with physical locations of additional operating reactors located < 113 km from closed reactor specified

Reactor name (location) Reactor name and distance/direction from closed reactor

Handford-N (Richmond, WA) Washington Nuclear 2; same site as closed reactor

Yankee Rowe (Rowe, MA)

Vermont Yankee; 24 km northeast

San Onofre (San Clemente, CA) San Onofre 2 and 3; all 3 reactors located at same site

Clinton (Clinton, IL)

LaSalle 1; 113 km north

LaSalle County 2 (Seneca, IL)

LaSalle 2; same site as closed

reactor

Zion 1,2 (Zion, IL)

Byron 1; 104 km west

Notes: WI = Wisconsin, CA = California, CO = Colorado, OR = Oregon,

WA = Washington, ME = Maine, MI = Michigan, CT = Connecticut,

MA = Massachusetts, IL = Illinois, and RI = Rhode Island.

* In this column, specific cities that appear within parentheses are located downwind in the wind direction cited.

Table 2.--Demographic Data and Downwind Counties Located < 64 km from Nuclear Reactors that Had Closed

Percentage

Population Black Hispanic Low SES
Reactor name per km[2] (1995) (1995) persor
in 1997 (%)
(1995)

U.S. 29.2 12.7 11.0 13.8

LaCrosse 40.1 8.0 10.2 Rancho Seco 127.0 7.4 13.6 13.6 Fort St. Vrain 22.3 6.6 14.4 10.8 Trojan 133.5 4.5 4.2 12.0 Maine Yankee 42.3 0:2 0.5 Big Rock Point 17.6 10.5 0.3 1.4 Haddam Neck/Millstone 144.3 3.0 2.3 Pilgrim 270.1 5.1 2.8 7.8

Areas with higher concentrations than U.S. 6 0 2 0 Areas with lower concentrations than U.S. 2 8 6 8

Notes: SES = socioeconomic status; low SES refers to those individuals whose incomes were below the poverty line.

Table 3.--Change in Average Strontium-90 Concentrations in Pasteurized Milk in Cities Located < 64 km from Nuclear Plants that Had Closed

Years included

City/state Closest reactor BC AC

Sacramento, CA Rancho Seco, CA 1983-1988 1989-1994
Denver, CO Fort St. Vrain, CO 1983-1988 1989-1994
Portland, OR Trojan, OR 1987-1992 1993-1994
U.S. (23 cities) 1983-1988 1989-1994

Average strontium-90 concentration

City/state BC n AC n Change (%)

Sacramento, CA 0.92 6 0.48 -47.1 Denver, CO 1.52 6 0.50 2 -67.1 Portland, OR 1.25 6 0.65 2 -48.0

U.S. (23 cities) 1.97 1.30 -34.0

Notes: BC: before closing reactor, AC = after closing reactor,

CA = California, CO = Colorado, and OR = Oregon.

* Concentrations of strontium-90 are expressed in picocuries of Sr-90 per liter of milk.

Table 4.--Change in "All-Causes" Death Rates of Infants during Their First Year of Life and Who Were Located < 64 km Downwind of Reactors, 2 Years before vs. 2 Years after Nuclear Plant Closings

Year Infant deaths Live births Reactor Closed BC AC BC AC 3,507 LaCrosse, WI 1987 36 30 3,452 Rancho Seco, CA 1989 418 390 44,500 49,414 Ft. St. Vrain, CO 1989 83 72 9,725 9,977 253 204 29,799 Trojan, OR 1992 30,320 Big Rock Point, MI 1997 25 2,922 3,040 15 Maine Yankee, ME 1997 19 18 38,841 4,013 Pilgrim, MA 97 76 12,956 13,412 1986 Millstone, CT 1995 166 130 22,261 21,093 1,097 935 130,032 134,200 Total for 8 areas U.S. average for 1986-1998 2-yr change

Deaths/1,000 BC Local Other state Reactor AC -15.4 LaCrosse, WI 10.27 8.69 -1.9Rancho Seco, CA 9.39 7.89 -16.0 -9.2 -5.2 -15.4 8.53 7.22 Ft. St. Vrain, CO -5.9 Trojan, OR 8.34 6.85 -17.9 -42.4 +2.0 Big Rock Point, MI 8.56 4.93 4.95 4.49 Main Yankee, ME -9.3 +22.8 -13.1 7.49 5.67 -24.3 Pilgrim, MA Millstone, CT 7.46 6.16 -17.4 -5.4

-17.4 * Totals for 8 areas 8.44 7.00 -6.7U.S. average for -6.4 2-yr change

Notes: BC = 2 yr befor closing reactor, AC = 2 yr after closing reactor, WI = Wisconsin, CA = California, CO = Colorado, OR = Oregon, MI = Michigan, ME = Maine, MA = Massachusetts, and CT = Connecticut.

Change (%)

* p < .01 (nuclear counties vs. both U.S. and other state totals). Table 5.-- Change in "All-Causes" Death Rates of infants during Their First Year of Life and Who Were Located < 64 km Downwind of Reactors, 2 Years before vs. 6 Years after Nuclear Plant Closings

Infant deaths Live births Year BC AC Reactor Closed BC AC

1987 36 69 3,507 10,302 LaCrosse, WI 44,500 144,770 Rancho Seco, CA 1989 418 1,038 Ft. St. Vrain, CO 1989 83 192 9,725 30,129 Trojan, OR 1992 253 523 30,320 92,649

Totals for 4 areas 790 1,822 88,052 277,880 U.S. average for 1986-1998 6-yr change

Deaths/1,000 Change (%) Reactor BC Local Other state ·AC LaCrosse, WI 10.27 6.70 -34.8 -7.7 Rancho Seco, CA 9.39 7.17 -23.6 -16.5 Ft. St. Vrain, CO 8.53 6.37 -25.3 -15.2 Trojan, OR 8.34 5.64 -32.4 -12.7 Totals for 4 areas 8.97 6.56 -26.9* -15.1 U.S. average for 6-yr change -11.9

Notes: BC = 2 yr before closing reactor, AC = 6 yr after closing reactor, WI = Wisconsin, CA = California, CO = Colorado, and OR = Oregon.

* p < .0001 (nuclear counties vs. both U.S. and other state totals). Rancho Seco difference (p < .05) and Trojan difference (p < .0001) were significant.

Table 6.--Change in "Congenital Anomalies" Death Rates of Infants during Their First Year of Life and Who Were Located < 64 km downwind of Reactors, 2 Years before vs. 2 Years after Nuclear Plant Closings

Year Infant deaths Live births Reactor Closed BC AC BC AC LaCrosse, WI 1987 3,507 3,452 Rancho Seco, CA 1989 90 44,500 49,414 20 24 Ft. St. Vrain, CO 1989 9,725 9,977 41 30,320 Trojan, OR 1992 61 29,799 Big Rock Pt., MI 1997 10 4 2,922 3,040 6 Maine Yankee, ME 1997 3,841 4.013 23 Pilgrim, Ma 1986 26 12,956 13,412 Millstone, CT 1995 51 37 22,093 21,093 Totals for 8 areas 271 217 130,032 134,200 U.S. average for 2-yr change 1986-1998

Local Other state Reactor BC AC LaCrosse, WI 2.00 1.16 -42.0 + 1.3Rancho Seco, CA -20.8 -10.1 2.02 1.60 Ft. St. Vrain, CO 2.06 2.41 +17.0 -6.6 Trojan, OR -31.3 -1.0 2.01 1.38 Big Rock Pt., MI 3.42 1.32 -61.5 + 1.0Maine Yankee, ME 1.36 1.25 20.2 +5.4 Pilgrim, Ma 2.01 1.71 -14.9 -32.5 Millstone, CT 2.29 1.75 -23.6 -7.7

Deaths/1,000

Totals for 8 areas 2.08 1.62 -22.4* -5.6 U.S. average for 2-yr change -5.5

Notes: BC = 2 yr befor closing reactor, AC = 2 yr after closing reactor, WI = CA = California, CO = Colorado, OR = Oregon, MI = Michigan, ME = Maine, MA = Massachussetts, and CT = Connecticut.

Change (%)

 ^{*} p < .05 (nuclear counties vs. both U.S. and other state totals).
 Table 7.--Change in "Congenital Anomalies" Death Rates of Infants

during Their First Year of Life and Who Were Located < 64 km Downwind of Reactors, 2 Years before vs. 6 Years after Nuclear Plant Closings

Year Infant deaths Live births
Reactor Closed BC AC BC AC

7 17 3,507 LaCrosse, WI 1987 10,302 Rancho Seco, CA 1989 90 228 44,500 144,770 9,725 30,129 Ft. St. Vrain, CO 1989 20 52 Trojan, OR 1992 61 123 30,320 92,649

Totals for 4 areas 178 420 88,052 277,850 U.S. average for

6-yr change 1986-1998

Deaths/1,000 Change (%)
Reactor BC AC Local Other state

LaCrosse, WI 2.00 1.65 -17.5 -7.7
Rancho Seco, CA 2.02 1.57 -22.3 -17.4
Ft. St. Vrain, CO 2.06 1.73 -16.0 -14.3
Trojan, OR 2.01 1.33 -34.0 -4.9

Totals for 4 areas 2.02 1.51 -25.2* -14.8 U.S. average for 6-yr change -10.9

Notes: BC: 2 yr before closing reactor, AC = 6 yr after closing reactor, WI = Wisconsin, CA = California, CO = Colorado, and OR = Oregon.

* p < .02 (nuclear counties vs. U.S.), and p < .08 (nuclear counties vs. other state totals). The Trojan trend was significantly different from those for U.S. (p < .03) and for other state (p < .006). Table 8.--Change in "All Causes" Death Rates of Infants during Their First Year of Life and Who Were Located 64-129 km Downwind of Reactors, 2 Years before vs. 2 Years after Nuclear Plant Closings

Year Infant deaths Live births
Reactor Closed BC AC BC AC

1,467 1,570 LaCrosse, WI 1987 13 14 Rancho Seco, CA 67 10,426 1989 101 9,637 Ft. St. Vrain, CO 1989 33 28 3,347 3,229 1,608 11 1.605 Trojan, OR 1992 9 1997 5 16 1,131 1,180 Big Rock Pt., MI 1,778 1,762 Maine Yankee, ME 1997 Pilgrim, MA 1986 No data: Atlantic Ocean is downwind Millstone, CT 1995 312 285 53,078 51,247

Totals for 8 areas 446 462 72,146 70,890

Deaths/1,000

Reactor BC AC Change (%)

+15.3 LaCrosse, WI 8.28 9.54 9.68 6.95 +39.3 (p <.01) Rancho Seco, CA Ft. St. Vrain, CO 9.86 8.67 -21.1 +22.0 6.84 Trojan, OR 5.61 4.42 13.56 +206.8 Big Rock Pt., MI Maine Yankee, ME 3.94 3.97 Pilgrim, MA area

Totals for 8 areas 6.18 6.52 +5.4

Notes: BC = 2 yr before closing reactor; AC: 2 yr after closing reactor, WI = Wisconsin, CA: California, CO = Colorado, OR = Oregon, MI = Michigan, ME = Maine, MA = Massachusetts, and CT = Connecticut. Counties included Buffalo (Wisconsin), Jackson (Michigan), Trempealeau (Wisconsin)--LaCrosse reactor, Douglas (Nevada), Lyon (Nevada), Story (Nevada), Washoe (Nevada)--Rancho Seco reactor; Albany (Wyoming), Laramie (Wyoming)--Fort St. Vrain reactor; Hood River (Oregon), Wasco (Oregon), Pacific (Washington)--Trojan reactor; Alpena (Michigan), Montmorency (Michigan), Presque Isle (Michigan)--Big Rock Point reactor; Franklin (Maine), Somerset (Maine)--Maine Yankee reactor; Norfolk (Massachusetts), Worcester (Maine), Providence (Rhode Island)--Millstone reactor. Table 9.--Change in "All Causes": Death Rates of infants during Their First Year of Life and Who Were Located < 64 km--and Not Downwind--from Reactors, 2 Years before vs. 2 Years after Nuclear Plant Closings

Ye	ear Inf	ant deat	ths Li	ve births	
Reactor	Closed	BÇ	AC.	BC	AC
LaCrosse, WI	1987	57	63	7,431	7,176
Rancho Seco, C	CA 19	89 3	310 32	24 36,9	44 40,073
Ft. St. Vrain, CC	1989	537	530	58,790	59,923
Trojan, OR	1992	66	73	11,826	12,296
Big Rock Pt., MI	1997	13	12	2,184	2,288
Maine Yankee,	ME 19	997	45 37	7 9,25	4 8,990
Pilgrim, MA	1986	579	528	57,466	60,619
Millstone, CT	1995	637	555	86,642	83,920
Totals for 8 are	as	2,244	2,122	270,537	275,285

Deaths/1,000							
Reactor	BC /	AC	Change (%				
LaCrosse, WI	7.67	8.78	+14.4				
Rancho Seco, CA	3.8	39 8.09	-3.6				
Ft. St. Vrain, CO	9.13	8.84	-3.2				
Trojan, OR	5.58	5.94	+ 6.4				
Big Rock Pt., MI	5.95	5.24	-11.9				
Maine Yankee, 'M	IE 4.	86 4.12	-15.4				
Pilgrim, MA	10.08	8.71	-13.6				
Millstone, CT	7.35	6.61	-10.0				
•			۸.				
Totals for 8 areas	s 8.29	7.71	<i>-</i> 7.1				

Notes: BC = 2 yr before closing reactor, AC = 2 yr after closing reactor, WI = Wisconsin, CA = California, CO = Colorado, OR = Oregon, MI = Michigan, ME = Maine, MA = Massachusetts, and CT = Connecticut. Counties included Allamakee (Iowa), Clayton (Iowa), Winnishiek (Iowa), Fillmore (Minnesota), Houston (Minnesota), Winona (Minnesota), Crawford (Wisconsin), Grant (Wisconsin), Monroe (Wisconsin), Richland (Wisconsin)-LaCrosse reactor; San Joaquin (California), Solano (California), Sutter (California), Yolo (California)--Rancho Seco reactor; Adams (Colorado), Arapahoe (Colorado), Boulder (Colorado), Gilpin (Colorado), Grand (Colorado), Jefferson (Colorado)--Fort St. Vrain reactor; Clatsop (Oregon), Washington (Oregon)--Trojan reactor; Grand Traverse (Michigan), Leelanau (Michigan)--Big Rock Point reactor; Androscoggin (Maine),

Cumberland (Maine), Sagadahoc (Maine)--Maine Yankee reactor; Barnstable (Massachusetts), Bristol (Massachusetts), Dukes (Massachusetts), Norfolk (Massachusetts), Suffolk (Massachusetts), Bristol (Rhode Island), Newport (Rhode Island) -- Pilgrim reactor; and Hartford (Connecticut), New Haven (Connecticut), and Suffolk (New York)--Millstone reactor.

Table 10.--Changes in the Incidence Rates of Ail Cancers during the First 5 Yr of Life of Children Who Lived in Counties that Were Downwind 64 km from Closed Nuclear Plants at 2 Years before vs.

7 Years after Closure of Reactors

Year Cancer closed cases (n) Reactor permanently BC AC

LaCrosse, WI 1987 7 15 Rancho Seco, CA 1989 50 153 Ft. St. Vrain, CO 1989 10 32

Total for 3 areas 67 200 U.S. change 1988-1989 to 1990-1996

Population

0-4 yr of age Cases/100,000 Reactor BC AC BC AC

LaCrosse, WI 17,492 61,053 40.02 24.57 Rancho Seco, CA 854,118 208,302 24.00 17.91 178,742 Ft. St. Vrain, CO 49,156 20.34 17.90

Total for 3 areas 274,950 1,093,913 24.36 18.28 U.S. change

Change (%) Reactor Local Other state *

LaCrosse, WI -38.6-5.1 Rancho Seco, CA -25.4 -1.0 Ft. St. Vrain, CO -12.0 +32.9

-25.0 ([dagger]) Total for 3 areas U.S. change +0.3

Notes: BC: 2 yr before the reactor was closed, AC = 7 yr after the reactor was closed, WI = Wisconsin, CA = California, and CO = Colorado.

* "Other" category for Colorado includes Denver area (i.e., Adams, Arapahoe, Boulder, Denver, Douglas, and Jefferson counties), approximately 55% of the state's population 0-4 yr of age.

([dagger]) p < .005 (nuclear counties vs. U.S.), and p < .006 (nuclear counties vs. other state total). Rancho Seco trend differed significantly from trends from U.S. (p < .02) and other state (p < .004).

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MELTDOWN

THREATS ARE INCREASING!

LIMERICK NUCLEAR PLANT CAN'T BE MADE FAILSAFE

THE ENTIRE PHILADELPHIA REGION COULD BE TURNED INTO A DEAD ZONE FOR GENERATIONS

MILLIONS COULD LOSE THEIR HEALTH, HOMES, AND ALL THEIR POSSESSIONS

LIMERICK MUST BE CLOSED, NOT RELICENSED!

There Are Too Many Meltdown Threats At Limerick

- 1. EARTHQUAKES Are Getting Stronger and More Frequent
 - ✓ 2 Earthquake Faults Are Within 17 Miles of Limerick
 - ✓ Limerick is 3rd on U.S. Earthquake Risk List
 - ✓ Design Flaws Increase Risk
- 2. TORNADOES, HURRICANES, FLOODS Are Getting Stronger and More Frequent
- 3. LIMERICK'S STRUCTURAL VULNERABILITIES
- 4. CYBER ATTACKS Can Cause Meltdown And Hard To Stop
- 5. TERRORIST ATTACKS WITH PLANES OR MISSILES
- 6. DEADLY HIGH-LEVEL RADIOACTIVE WASTES STORED IN POOLS AND CASKS
- 7. CORROSION, DETERIORATION, AGING EQUIPMENT, BURIED PIPES, CABLES
- 8. HUMAN ERROR

Lessons From Japan's Nuclear Disaster

- 1. Inspections and Oversight Don't Make It Safe. Regulators are Ineffective to Stop a Meltdown. "Redundant" Safety Systems Don't Prevent Meltdowns.
- Loss of Power Can Cause Loss of Cooling Water and Meltdown In Nuclear Plant Generators And Fuel Pools
- 3. It Doesn't Take An Earthquake to Cause Loss of Power and/or Loss of Cooling Water Loss Of Cooling Water Could Also Happen At Limerick Due To:
 - ✓ Loss of Power

Limerick back-up power is inadequate (only hours, not days).

✓ Fire

Limerick is not required to follow the safest fire safety regulations

✓ Terrorist Attack

Limerick is not required to guard against a 9/11 type terrorist attack

✓ Human Error

Accidents Happen

- 4. Limerick's Power Back-Up Is Inadequate.
- We Can't Trust Nuclear Plant Owners To Provide Full Timely Disclosure Or Stop Disastrous
 Radioactive Releases From Poisoning Everything
- 6. We Can't Rely On Government To Take Immediate Protective Action
- Limerick Nuclear Plant's 10-Mile Evacuation Zone Is NOT Adequate
 Limerick Evacuation Zone Should Be At Least 50 Miles
 Includes 8 Million People Philadelphia Is 21 Miles Away Safe Evacuation Unrealistic

LIMERICK NUCLEAR PLANT IS "A TICKING TIMEBOMB"

- Repeated Problems and Shutdowns
 - June 4th, 2011 the Mercury reported 3 Limerick shutdowns in 1 week
 - February 2011, a shutdown lasted over 2 days
 - June, 2010 a shutdown occurred
 - 2007-08 there were 5 shutdowns, one with loss of cooling water.
- Complicated Aging Equipment With Miles of 25-Year Old Corroding and Deteriorating Underground Pipes and Cables, All Vulnerable to Failures
 Leading To Accidents/Meltdown From Fire, Human Error, Natural Disasters
- 3rd on Quake-Risk List With Unreliable Systems For Protection
- Overloaded Fuel Pools With Inadequate Back-Up Cooling Power
- Dangerous Casks With Design Flaws and Corrosion Concerns
- NO Protection Against Terrorists' Planes and Missiles
- Lax Fire Safeguards

LIMERICK MUST BE CLOSED, NOT RELICENSED!

There Are Too Many Meltdown Threats At Limerick

- ✓ <u>EARTHQUAKES</u> Limerick is 3rd on the earthquake risk list. Earthquakes are becoming stronger and more frequent. Earthquakes can lead to loss of power, loss of cooling water, then meltdown. When things shake, things break. Miles of buried corroding, deteriorating pipeline and cables can be broken, leading to disaster. See ACE Earthquake Summary for Details.
- ▼ TORNADOES, HURRICANES, FLOODS As we have seen recently, increasingly stronger natural disasters have disrupted power at nuclear plants across the U.S. and could have led to meltdown. Let's hope Limerick closes before it becomes the first to meltdown from the consequences of extended loss of power from one of these events. Limerick's back-up power only lasts for hours, not days.
- ✓ <u>CYBER ATTACKS</u> Are now declared an act of war. A cyber attack on Limerick could disrupt power for an extended period, eventually leading to meltdown. If hackers can get into computers at the Pentagon and other well guarded facilities, terrorists could get into Limerick's systems NRC is complacent about cyber attacks.
- TERRORIST ATTACKS WITH PLANES OR MISSILES Limerick is not guarded against a 9/11 type terrorist attack because Exelon has not been required to spend the money to provide protection. Limerick's fuel pools, which can be turned into weapons of mass destruction, are especially vulnerable to aircraft penetration according to a 2000 NRC study, stating public health consequences of a nuclear fuel fire in a fuel pool caused by loss of cooling water could result in tens of thousands of deaths up to 500 miles from the damaged facility.
- DEADLY HIGH-LEVEL RADIOACTIVE WASTES STORED AT LIMERICK IN POOLS AND CASKS
 Large volumes of Limerick's highly radioactive wastes (fuel rods spent fuel) are stored in densely packed fuel pools, elevated five stories above and outside the reinforced containment structure for the reactor. Roof top nuclear waste storage pools are highly vulnerable to a variety of attacks from above, below, and on three sides. There are also concerns about a radioactive fire starting in Limerick's casks from NRC allowing Exelon to remove fuel rods before 5 years of cooling in pools and moving to casks.
- ✓ <u>DOCUMENTED CORROSION, DETERIORATION OF EQUIPMENT AND BURIED PIPES,</u>

 <u>CABLES</u> Aging equipment and miles of corroding aging hard to inspect pipes and cables buried under Limerick, present too great a risk for lost power, fire, and meltdown. Limerick is not even required to follow the safest fire safety regulations.
- ✓ <u>LIMERICK'S STRUCTURAL VULNERABILITIES CAN NO LONGER BE TOLERATED -</u> A reactor with the same design as Limerick would never be built today. It can't be made failsafe. Why would it be relicensed? Limerick, a GE Mark II boiling water design, is similar to those in Japan's catastrophe. In addition to vulnerable fuel pools and earthquake risk design flaws, a 2006 report shows Limerick's containment is substandard, meaning Limerick would release even more radiation in a disaster.

Limerick Nuclear Plant: A Ticking Time Bomb

- 1. Limerick Nuclear Plant Is A Ticking Time Bomb
 - Repeated Problems and Shutdowns 2007 thru 2011
 - 2 Near Misses 1995 and 2001
 - Aging and Deteriorating Equipment
 - Overloaded Fuel Pools and Storage Casks
 - Threats of Meltdown from Fire, Equipment Failure, Natural Disasters, Human Error
 - Threats of Terrorist Attacks
 - NRC's Lax Standards and Enforcement
- 2. Relicensing is Dangerous This Ticking Time Bomb Needs to Close in 2029.
 - Exelon Wants 20 More Years for Limerick Operations To 2049
 - Limerick CANNOT Be Made Failsafe by Exelon or NRC
- 3. Limerick's Deadly Radioactive Wastes
 - Least Bad Solutions For Limerick's Radioactive Wastes
 Store It Safer On-Site Stop Making It
 - LLRW, Low-level, still high risk Incineration increases threats
 - Taxpayers and ratepayers foot the bill possibly forever
- 4. Spent Fuel Pools
 - Contain about 75% of Spent Fuel
 - OVERLOADED with massive amounts of high-level radioactive waste rods. Wastes held in pools exceed design expectations
 - Hold more high-level radioactive wastes than any other nation
 - Vulnerable Targets for Terrorists or Cyber Attacks
 - An attack on U.S. spent fuel pools could potentially result in a worse disaster than Chernobyl or Fukushima
- 5. Above Ground Casks
 - Threatened by natural disasters like earthquakes, tornadoes, and floods
 - If air flow vents get clogged for an extended period, rods can overheat and combust
 - Corrosion of steel holding wastes is a huge concern
 - Containers are expected to last 50 years wastes stay dangerous over a million years
 - Likely to stay on site for decades, if not forever must be made safer
- 6. Transportation Risks Too Deadly, Too Dangerous
 - Loading and Unloading
 - · Presents extraordinary health, environmental, and financial risks on-site and along the route
 - Train and truck accidents of major concern, especially for fire from fuel
- 7. NRC Weakens Safety Standards and Rules
 - "Safety" Dangerous Deception
 - Pattern of Collusion Between NRC and the Nuclear Industry to Weaken Regulations and Standards To Relicense Old Nuclear Plants Like Limerick

PREVENTION OF A MELTDOWN IS CRITICAL

- 8. Limerick Needs To Be Guarded Against Missiles and Airstrikes
- 9. Fuel Pools Need To Be Emptied Sooner, Without Taking Rods Out Before 5 Years
- 10. Original Fire Safety Standards Need To Be Followed
- 11. Back-Up Generators Need To Be Capable of Lasting Weeks, Not Hours & Checked More Regularly

LIMERICK IS VULNERABLE TO MELTDOWNS FROM EARTHQUAKES

1 FAULT - 9 MILES AWAY 1 FAULT - 17 MILES AWAY

- ✓ Some Limerick Systems, Structures, and Components Are Potentially Unreliable If An Earthquake Hits
- ✓ Flood and Fire Prevention Seals May Not Tolerate a "Seismic Event"
- ✓ Limerick's Design Flaws Can Result In More Radiation Released In A Disaster

EARTHQUAKES ARE GETTING STRONGER AND MORE FREQUENT LIMERICK MUST BE CLOSED, NOT RELICENSED!

Fact Sheet Compiled by ACE October, 2011

- <u>Limerick Is Highly Vulnerable To Earthquakes</u> Limerick ranked 3rd worst of 65 U.S. nuke plants by federal officials for potential core damage from earthquake risk, which could result in a disastrous meltdown.ⁱ Earthquakes are becoming stronger and more frequent.
- 2. An Earthquake Affecting Limerick Could Cause More Core Damage Than At 98 Other Nuclear Plants Estimate shows Limerick's risk rose 141%, taking into account odds for the chance of a serious earthquake.
- 3. Flaw Found in Safety Mechanism at Limerick Nuke Plant (Mercury 10-5-11)

 GE Hitachi issued a warning to the Nuclear Regulatory Commission in September 2010 and confirmed the concern again September, 2011, that a key safety mechanism at Limerick might not work during an earthquake. This malfunction of control rods could contribute to a meltdown. Incredibly, NRC took no action on these warnings. Reason enough, to close Limerick Nuclear Plant as soon as possible.
- 4. <u>Japan's Catastrophic Meltdowns Were Caused by Earthquake, Then Loss Of Cooling Water</u> Fukushima meltdowns started March 2011, and are still not controlled seven months later. Radioactive fallout spread through Japan, across the northern hemisphere, and arrived in the U.S. six days later; millions were exposed, many will become ill, some will die.
- 5. Meltdown Narrowly Avoided from Virginia Earthquake An earthquake in Virginia on August 23, 2011 cut power to North Anna nuclear plant, 11 miles from epicenter. Four backup generators (one of which failed) prevented another Fukushima. However, 115 ton radioactive waste casks (25) were moved. Cracks were found in the reactor containment building. There are concerns about unidentified leaks in miles of buried pipes and cables. A safety alert was prompted at Limerick Nuclear Plant after this 8-23-11 Virginia earthquake.
- 6. <u>Earthquakes Actually Occur in Philadelphia</u> Two small earthquakes occurred recently in Philadelphia. Philadelphia is just 20 miles from Limerick Nuclear Plant. The most recent earthquake occurred May 29, 2011, causing residents' houses to shake after a big boom.ⁱⁱⁱ
- 7. <u>Limerick Contains Massive Radioactivity</u>. Limerick reactors 1 and 2 contain far more radioactivity in their cores, waste pools, and dry casks of waste, than Chernobyl 4 when it melted down in 1986.

- 8. A Limerick Meltdown Could Harm Millions. A government study based on the 1980 census, estimated that a meltdown to Limerick's core could cause 684,000 residents (most of any U.S. reactor) within 20 miles to suffer from radiation poisoning (74,000 would die), and 34,000 cancer deaths would occur. From 1980 to 2010, the area's population increased by 183%.
- 9. Philadelphia Region Can't Be Safely Evacuated. Safe evacuation would be impossible after a meltdown at Limerick, since 8 million people live within 50 miles. Philadelphia is just 20 miles away. In this very heavily populated region for example, just one main road, Route 422, is considered one of the region's toughest commutes, even on a normal day.

10. Government Regulations on Earthquakes Can't Eliminate Risks.

Earthquake threats at Limerick are far greater than expected during construction. 9-22-11 we learned corners were cut during construction.

- Updated review and regulations won't prevent an earthquake disaster.
- Limerick was not built based on the most protective earthquake design basis or standards, but instead on outdated seismology science of the 1950s and 60s.
- The inadequacy is both obvious and dangerous.
- A new era of seismic understanding shows that earthquakes can go far beyond design basis.
- After the fact regulation changes cannot correct unprotective design flaws and limitations.
- Logically, it is not feasible to retroactively redesign inadequate Limerick earthquake design flaws.
- It is impossible to believe Limerick's inadequate and outdated 30-year old "design basis" construction for seismic activity ever can or will ensure safety.
- 11. <u>Emerging Evidence Indicates Earthquakes Are Likely To Become More Frequent In PA</u> There is emerging evidence that seismic activity can increase as a result of hydraulic fracturing, which is increasing dramatically in PA.vii August 24, 2011, a USGS employee listed how, why and where fracking is causing earthquakes.viii
- 12. Why NRC's Earthquake Review Won't Prevent A Disaster NRC relies on nuclear industry self-evaluations and reports on what Limerick can or cannot withstand.
 - Despite evidence that earthquakes are becoming more severe, NRC blindly accepts claims made by the nuclear industry about their nuclear plants withstanding the largest credible quake.
 - In fact, NRC ignored USGS statements elsewhere that were in direct conflict with nuclear industry claims.
 - Compliance with new NRC regulations is voluntary, not mandatory. Industry will not spend the money on improved safety unless required to do so.
- 13. Community Concerns Rise With Recent Earthquakes and Self-Policing With Exelon doing its own analysis, our community has little confidence in full and accurate disclosure of earthquake risks at Limerick. Evidence shows that we cannot believe or trust Exelon's self-evaluation. See ACE report on Exelon deception.

After witnessing Fukushima devastation, other nations like Germany, Switzerland, and Italy have decided to close their nuclear reactors.

> But NRC has been dismissive of catastrophic threats and continues to relicense dangerous, aging nuclear plants like Limerick.

¹ U.S. Nuclear Regulatory Commission – Limerick ranked 3rd (Reported by MSNBC)

¹¹ 2008 NRC Risk Estimate and 1989 Geological Data

iii Recorded by USGS. (Reported by AP 5-29-11)

^{iv} CRAC-2 Report (Reported to Congress 1982)

VU.S. Census Data, 1980 through 2010

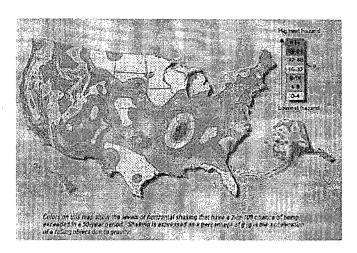
vi "Sprawl to Crawl on Route 422," Philadelphia Inquirer, January 2009

Huffington Post, March 14, 2011, by Sarah Eddington, "Arkansas Earthquakes Decline After 'Fracking' Injection Well closures"

viii USGS Guest, on Diane Rehm's Earthquake Update Show, 8-24-11

Limerick plant ranked 3rd on U.S. quake-risk list

Published: Thursday, March 17, 2011 By Evan Brandt ebrandt@pottsmerc.com



LIMERICK -- Data in a Nuclear Regulatory Commission study released less than a year ago has led an MSNBC investigation to conclude that Exelon Nuclear's Limerick Generating Station is the third most at risk of damage from earthquake of all 104 nuclear plants in the nation.

The ranking takes on particular significance as the world watches Japan grapple with a cascading nuclear disaster caused by a Pacific Ocean earthquake and subsequent tsunami on March 11.

The NRC study came about as a result of the U.S. Geologic Survey's 2008 updating of earthquake risks around the country, which used better data and more sophisticated measurements and modeling than were used in the 1996 and 2002 efforts. As a result of the new seismic data, the NRC study looked at all 104 nuclear plants in the country and increased the risk probability of an earthquake damaging many of them. In fact, only eight had their risk of earthquake damage lowered, MSNBC reported.

The risk of an earthquake damaging either or both reactors at Limerick was increased by 141 percent, now making it the third most at risk, after the Pilgrim Nuclear Plant in Plymouth Mass. and the Indian Point Atomic Generating Station in Buchanan, N.Y., according to the analysis by MSNBC.

That analysis found the chance of an earthquake damaging the plant was raised in the study to 1 in 18,868. The previous risk rating was 1 in 45,455. For comparison purposes, as outlined in an MSNBC article, the chance of winning the grand prize in the next Powerball lottery is 1 in 195,249,054.

The analysis also reveals that of the top 10 nuclear plants most at risk from earthquake damage, three are in Pennsylvania, more than any other state. The other two are the Shippingport Atmonic Power Station in Beaver County and the Three Mile Island plant in Dauphin County. Continued...

As a next step, the NRC has now selected several plants from which it will seek additional data in order to get a better estimate of the possibility of catastrophic failure from an earthquake.

Sheehan confirmed on March 12 that the NRC has selected Limerick as one of the plants requiring further study.

Joe Szafran, a spokesman for the Limerick facility, said Exelon is aware of the analysis and is cooperating with NRC's latest inquiry. He also noted that Exelon is confident in the Limerick plant's ability to withstand whatever earthquakes might strike a region not known for them. "These plants are designed with historic data and seismic information and designed to withstand the largest considered likely and then an extra margin of safety is added" in the design and construction, Szafran said. An NRC fact sheet notes that plants are designed to withstand "the area's maximum credible earthquake" and also requires plants "to assess their potential vulnerability to earthquake events, including those that might exceed the design basis."

The Ramapo fault line has several smaller fault systems associated with it, including the Chalfont, Flemington and Hopewell faults, but maps seem to show it traversing Pennsylvania several miles to the north of the immediate area near Limerick.

Although this fault is not known for major tremblors, several earthquakes have been recorded in its proximity, most of them in northern New Jersey. The most recent were two small earthquakes recorded there in February 2009.

Sheehan said on March 12 he does not know if the Ramapo fault was a factor in the NRC's decision to put Limerick on the list of plants that will be getting an updated seismic analysis.

The most powerful recorded earthquake in Pennsylvania was 5.2 in 1998 in the northwestern part of the state. In 1984, a earthquake that registered 4.1 on the Richter scale occurred in Lancaster County. The epicenter of that quake was near the Peach Bottom nuclear plant in York County, according to the Lancaster Intelligencer-Journal. <u>Continued...</u>

Peach Bottom, which is also owned by Exelon, is also on the list of plants which will get a new earthquake assessment from the NRC, that newspaper reported. That plant placed 34th on the earthquake risk rankings compiled by MSNBC. Although the latest NRC study has altered the risk statistics for the nation's plants, the agency does not conclude that this risk is inordinately high.

"Overall seismic risk estimates remain small," notes the NRC report, released Sept. 2, 2010. "There is no immediate safety concern."

However, several factors pushed the NRC to take a closer look at certain plants. The primary cause is a better understanding of seismology resulting from better equipment, better measuring and better computer models. So in 2008, the U.S. Geologic Survey updated its assessment of seismic threats. Among the changes was "a broader range of earthquake magnitudes for the central and eastern U.S.," according to a USGS release on the update. Another important change was "several new and updated ground-shaking models for earthquakes in the central and eastern U.S. were implemented in the maps," USGS wrote.

In effect, nothing has changed but the government's understanding of how earthquakes work, what those changes mean to specific locations, and how that new understanding could affect what the agency previously considered the risk of earthquake damage to be. Consider for example that the risk rankings put together by MSNBC from the new NRC study do not put plants in California, Oregon or Washington near the top of the list.

That's because the earthquake risk was more pronounced in those locations and those plants were built with additional protections to account for that higher risk.

The earthquake risk at Limerick was considered low when its two reactors were commissioned, the first in 1985 and the second in 1989. As a result, it was not designed or built with the necessity of withstanding a major earthquake in mind.

And the NRC study may well find that the precautions in place are adequate. Or it may require some retrofitting at the plant, which Exelon will undertake if required, Szafran said.

"These things change as new information becomes available," said Szafran. "New data becomes available and agencies have to respond to that. We understand that. Who knows, maybe in another ten years, more data will be available and our numbers will be re-adjusted again."

Nevertheless, said Szafran, "Our top priority is the health and safety of the community and our employees."

Limerick Nuclear Plant Is Apocalyptically Unsafe

Nuclear power is coming under increased scrutiny around the globe.

The Six Most Dangerous Aspects

Of Operating Limerick Nuclear Power Plant Harder and Longer.

- 1. If Limerick Nuclear Plant melts down, the entire Philadelphia region is doomed. Philadelphia is just 20 miles downwind from Limerick. In Japan, the U.S. ordered a 50-mile evacuation zone. Over 8 million people live within 50 miles of Limerick. There will be no chance to evacuate the city to protect ourselves from radiation. People will be ordered to stay indoors, but gamma rays will go right through a house. Vast numbers of people will get radiation sickness and die. Radiation will make the region uninhabitable. Our whole area could become a ghost town that nobody can safely live in for thousands of years. What would that do to the economy? The older Limerick gets, the more risk of meltdown and disaster. Keeping old nuclear plants in business is clearly only motivated by money.
- 2. Limerick Nuclear Plant is aging and deteriorating. When Limerick went into operation in 1985, it was licensed for, and designed to last 40 years. Everything has an expected life span. After 26 years, troubling signs of problems are already evident; including five unplanned shutdowns in one year (2007 to 2008), one with loss of cooling water. Others occurred since 2008, three in just one week this past June, 2011. Some of the problems could potentially lead to meltdown. From NRC records, a Greenpeace report listed two near misses, in 1995 and 2001. Exelon claims they will replace aging parts, but the nuclear industry admitted that some parts are too big and too expensive to replace. Of particular concern, the reactor vessel becomes too brittle as do miles of underground buried pipes and cables critical for safe operations. Exelon's history suggests they will cut corners to avoid spending money and use dangerous delay tactics. Fire safety is one example. Exelon avoided compliance with important fire safety regulations at Limerick for decades, then recently agreed to only follow weakened fire safety regulations.
- 3. Limerick Nuclear Plant Has Design Flaws GE warned the NRC in 2010, and stressed again in 2011, that the design of Limerick's reactors had an inherent danger that could prevent a quick shut-down in an emergency. The mechanism that inserts control rods may not function properly in the event of an earthquake. Limerick's containment has been shown to be substandard, meaning in an accident or terrorist attack, more radiation would be released. Realistically, how can design flaws be corrected, with more inspections, reports, or regulations? This reactor core model is one of the single most observed parts of any reactor system. How many other engineering "gaffes" exist in the thousands of other safety and control systems in Limerick's design?
- 4. Limerick Nuclear Plant's spent fuel pools are a catastrophe waiting to happen. Limerick's spent fuel pools are like huge swimming pools jam-packed with high-level radioactive wastes stored there since Limerick started operating in 1985. They are filled with radioactive fluids that are threatening to boil away, introducing radiation into the air. They are vulnerable to a 9/11 type terrorist attack with a plane or missile. That kind of attack could lead to an unstoppable

radioactive fire which could impact people hundreds of miles away, according to an NRC study (2000). Negligence could also result in a severe nuclear accident, that could be a horrific disaster by itself. Limerick's Fuel Pools Are Overloaded With All Limerick's Deadly Radioactive Wastes Since 1985. Our Region Is Now A High-Level Radioactive Waste Dump, Providing An Inviting Target For Terrorists.

- 5. Limerick Nuclear Plant is now ranked 3rd on the earthquake risk list. Limerick is extremely susceptible to a meltdown caused by an earthquake, something that is happening more frequently, and with greater strength. An earthquake could cause catastrophic conditions at Limerick, similar to those in Japan. With power down, Limerick would be forced to rely on emergency diesel generators to continue pumping over 200,000 gallons of water per hour needed to cool the reactors. Limerick's generators for back-up power would function for hours, not days. There is no back-up power for packed and stacked deadly fuel pools. There's not enough water in the Schuylkill River to continue to supply over 200,000 gallons per hour, especially in times of extreme heat and drought. Eimerick's cooling towers significantly depleted the Schuylkill River over the past 26 years. By 1999, the river reached record low flows. Limerick doesn't store enough water to keep cooling generators and fuel pools for days. Two recent earthquakes in Philadelphia and the 8-23-11 Earthquake in Virginia that caused an "unusual event" at Limerick make it clear earthquakes are a very serious threat at Limerick Nuclear Plant.
- 6. The Nuclear Regulatory Commission (NRC) has become a lapdog, rather than a watchdog. NRC's weakened regulations, lax enforcement, negligence and rubber stamp permitting have all destroyed NRC's credulity. NRC "rubber-stamped" 71 of 71 U.S. nuclear reactors for another 20 years, regardless of increasing harms and risks. There's no guarantee Limerick can operate safely until 2029 when its license expires, much less 20 years longer. NRC cannot dispute that Limerick's reactors may crack from being bombarded with high-level radiation, cannot guarantee there will be enough safe usable water in the Schuylkill River for the almost two million people who need it for drinking water from Pottstown to Philadelphia, and cannot guarantee corrosion and deterioration of miles of underground pipes and cables will ever be identified, much less replaced.

Specific Concerns About NRC's Weakened and Lax Policies and Standards At Limerick

- Limerick Nuclear Plant Already Had 2 Near Misses 1995 and 2001 (Documented by Greenpeace From NRC Files).
- More Radiation Would Be Released Because Limerick Containment Is Substandard.
- Limerick's Miles of Cables and Underground Pipes Are Corroding and Deteriorating
- Many Unplanned Shutdowns Were Reported In Recent Years. One Caused Loss of Cooling Water.
- Limerick Is NOT In Compliance With Safest Fire Safety Regulations, Even Though Fires Can Lead To Meltdown.
- Limerick Is NOT Protected Against 9/11 Type Terrorist Attacks With Planes or Missiles Even Though Terrorists
 Want To Attack Nuclear Plants We Are One of the Most Heavily Populated Regions.
- An Al-Qaida Suspect Worked at Limerick During Refueling Each Year from 2002 to 2007.
- Cyber Attacks on Limerick's Computer Systems Could Lead To A Meltdown, and NRC is Complacent About That.

Compiled By The Alliance For A Clean Environment - Updated August, 2011

Nuclear Disaster Can Happen At Limerick. Many Things Can Trigger Meltdown!

The horrific Japan nuclear disaster can happen here at Limerick Nuclear Power Plant.

The Japan nuclear disaster revealed that nuclear power's so-called "redundant safety systems" fail and when they do the consequences are cataclysmic.

> The whole idea of "safety" is a baseless huge leap of faith.

Many things could trigger a Limerick meltdown. A nuclear disaster at Limerick Nuclear Plant can be triggered by a fire, terrorist attack, hurricane, tornado, human error, or equipment failure, like at TMI. Each could cause loss of power and/or cooling water that can lead to a meltdown. While Limerick is ranked 3rd on the earthquake risk list, a Limerick disaster with generations of devastating unthinkable consequences can be caused by so many other factors.

ACE identified great cause for concern at Limerick. Many in our region have long been concerned about an accident or terrorist attack causing a nuclear disaster at Limerick Nuclear Plant.

NRC ignored valid concerns including numerous reported accidents which fortunately didn't result in a meltdown:

- ✓ Limerick Nuclear Plant had two "Near Misses" (1995 2001), according to a 2006 report based on NRC records called "American Chernobyl". That report reveals that Limerick has "Substandard Containment", meaning far more radiation would be released in an accident or terrorist attack.
- ✓ Limerick Nuclear Plant is NOT in compliance with NRC's most stringent fire safety regulations, even though fires are a major factor in meltdowns. Weaker regulations reduce Exelon's regulatory burdens and costs, but increase risk of meltdown.
- ✓ Limerick lost coolant causing shut-down April 24, 2007. 15 days later, NRC still had no explanation. Remember, the disaster in Japan started with loss of coolant.
- ✓ Limerick had five unplanned shutdowns in just over a year. April 9, 2007 5 days after refueling there was a problem with a seal on the pump.
- ✓ In one week in June, 2011 Limerick had 3 unplanned shutdowns.

Claims that NRC oversight will prevent meltdowns are delusional. NRC's decisions are based largely on their baseless ad nauseum "beliefs". NRC's track record and responses to ACE concerns suggest NRC puts nuclear industry profits ahead of public safety. Don't count on NRC oversight to prevent a Limerick meltdown. NRC's negligence should concern everyone in our region. Examples:

- ✓ Fire NRC acquiesced to nuclear industry convenience and bottom line by developing a second weaker set of fire safety standards which allow Limerick to deceptively claim compliance. NRC says it's "SAFE ENOUGH". Knowing fires can cause meltdowns, we need the safest fire barriers and other safeguards and object to "Reduced Regulatory Burden", "Exemptions", and "Flexibility".
- ✓ Terrorist Attacks NRC failed to require Limerick to guard against a 9/11 type terrorist attack by plane or missile. Either could lead to a nuclear fire and meltdown. Limerick Airport is about one mile away.

An Al-Qaida suspect worked at Limerick 2002 to 2007. How effective are NRC screening requirements for the 2000 workers that come to refuel each year?

Experts call high level radioactive fuel rods the single greatest security vulnerability in the U.S. An estimate of over 1,000 tons are stored at Limerick in fuel pools and above ground in casks. Every year Limerick operates about 40 tons more could be produced.

- Water loss in Limerick pools can heat up spent fuel rods, which can then self-ignite and burn in an unstoppable fire, releasing so much radioactivity they're seen by experts as pre-deployed radiological weapons.
- ✓ Fuel rods are to be cooled 5 years before removal to above ground casks. NRC allowed Limerick to remove fuel rods for transfer far earlier. We're told some were removed in just one year, creating risk of a highly radioactive fire in casks too.
- One expert said that a nuclear fire in a spent fuel pool would release enough cesium-137 to render about 95,000 square kilometers of land uninhabitable.
- ✓ A 2000 NRC report determined a catastrophic meltdown in spent fuel pools could cause fatal radiation-induced cancer in thousands of people as far as 500 miles from the site.

Prevention is imperative. Evaluation plans are unrealistic. There would be complete gridlock. Chaos is inevitable. We are too heavily populated. Escape routes are already jam-packed during rush hour. Many would flee into the radioactivity. Japan proves a 10-mile evacuation zone is ludicrous. Minimally, a 50-mile evacuation zone is imperative. Almost eight million people live within 50 miles of Limerick. Philadelphia is only about 20 miles away in the predominant wind direction. Where would everyone go? There aren't enough shelters or food and water waiting for almost 8 million people.

The 1982 Calculated Risk Accident Consequences (CRAC) report to Congress estimated staggering numbers impacted by a Limerick accident or terrorist attack. Costs would be astronomical.

- ✓ 74,000 Early Fatalities✓ 610,000 Early Injuries (most for any U.S. reactor)
- ✓ 34,000 Cancer Deaths.
- ✓ Estimated costs \$417 Billion for Limerick 1, \$386 Billion Limerick 2.

Since 1980, population more than doubled, doubling harms and costs. NRC's current cost estimate could be over a trillion dollars, largely paid by taxpayers. Exelon pays only the first \$11 Billion.

Given the stakes, and reality of actual risks for meltdown, we disagree with Exelon and their promoter NRC, that Limerick Nuclear Plant is "Safe Enough".

Elected and agency officials need to demand precautions to reduce risks for all of us becoming nuclear refugees, losing everything we have, including our health.

- 1. Extend Back-Up Power To Last For Days, Not Just Hours
- 2. Guard Limerick Against A 9/11 Type Terrorist Attack With A Plane or Missile
- 3. Extend The Evacuation Zone To 50 Miles, Not Just 10
- 4. CLOSE Limerick Not Relicense Until 2049.

The Alliance For A Clean Environment April, 2011

Improved Safeguards Are Imperative.

Exelon and NRC absurdly claim Limerick Nuclear Plant is "Safe Enough". Facts suggest otherwise.

Japan's "redundant" safety systems failed. So could Limerick's.

We've been lucky so far. A 2006 report, "American Chernobyl", showed Limerick Nuclear Plant had two near misses (1995 and 2001), and that Limerick has substandard containment, that would release more radiation in a disaster. 4-24-07, the Mercury reported Limerick lost coolant causing shut-down. 15 days later, NRC still had no explanation. Limerick had five unplanned shutdowns in one year, and 3 unplanned shutdowns in one week this year. With such problems and ever more violent weather conditions, anything could happen.

It wouldn't take an earthquake or tsunami to cause a radioactive disaster at Limerick that could jeopardize our health and lives forever, and cause us to become nuclear refugees losing everything we own. Our region could become a dead zone for decades, possibly forever. The Japan nuclear disaster was caused by extended loss of power, then loss of cooling water. That could happen at Limerick Nuclear Plant from a terrorist attack, fire, catastrophic weather event, human error, or equipment failure.

Accidents happen. It's impossible to make nuclear plants failsafe. But, NRC's reckless weakened regulations increase risk. ACE investigations suggest everyone in our region should be very concerned about NRC's dangerously irresponsible failure to confront safety issues, including fire safety. NRC failed to require Exelon to bring Limerick into full compliance with the safest fire safety regulations. Instead, NRC allowed the industry to make a different risky set of rules with "exemptions", "flexibility", and "reduced regulatory burdens". Why? To save Exelon money.

A 9/11 type terrorist attack with a plane or missile could cause a Limerick disaster, yet Exelon is not required to provide defense against a terrorist's plane or missile. Fuel from a small crashed plane could trigger a fire that could lead to loss of power, loss of coolant, then meltdown. Army testing proves fuel rod containers can be penetrated with a missile. Deadly released radiation could impact miles. An Al-Qaida suspect worked at Limerick during yearly refueling from 2002 to 2007, showing the reality of an insider threat. Feel safe?

Prevention is imperative. To Reduce Risks Of A Meltdown At Limerick:

- 1. Extend Back-Up Power To Last For Days, Not Just Hours
- 2. Guard Against A 9/11 Type Plane or Missile Terrorist Attack
- 3. Extend Limerick's Evacuation Zone From 10 To 50 Miles
- 4. STOP Additional Uprates That Would Run Limerick Harder
- 5. CLOSE Limerick In 2029 NOT Relicense Until 2049

Why We Are Worried - Lessons From the Japan Nuclear Disaster

- 1. The Nuclear Industry Cannot Be Believed
 - Nuclear power kills (deaths from industry related accidents 1961 to 2004)
 - Reports show Limerick had two near misses 1995 and 2001
 - Accident Statistics for Limerick (1980 CRAC Calculations vs. 2000 estimates)
 - Nuclear plant fuel pools pose enormous risk threats
 - A pattern of delayed and intentionally minimized notifications of public threats
 - "Science for sale" is often used to deny, ignore, oppress, or censor the actual facts

2. Governments Cannot Be Trusted

- History suggests that timely and complete information for the public won't be provided
- In meltdown situations, exposure risks are not fully disclosed, typically only lodine and Cesium
- Harmful impacts of meltdown worst case consequences (1974 Rasmussen Report)
- Nuclear plant worker safety is not always a high priority during emergencies
- Examples of Outright Lies Three Mile Island 1979 Chernobyl 1986 Fukushima, Japan 2011

3. Regulators Cannot Be Relied Upon For Protection

- Japan's regulators failed on many levels to protect their citizens
- U.S. NRC oversight is a dangerous delusion, based on outdated regulations
- NRC often openly promotes the industry it is supposed to regulate
- Evacuation Plans are inadequate (10 mile EPZ vs. 50 mile "safe evacuation" in Japan)
- NRC is viewed as the most severely compromised federal agency by many experts

4. Culture of Complicity a Pattern in Both Japan and the U.S.

- Appearances of collusion among nuclear power companies, regulators, and politicians
- -Tokyo Electric Power failed to take action to complete needed repairs reported to them
- Regulators divulged the identity of the whistleblower to TEPCO
- -Weeks before the nuclear accident, regulators approved a 1-year extension beyond 40 years
- Similar problems plague the NRC including Vermont Yankee Plant and others
- Shortly after releases in Japan, NRC raised radiation dose limits in the U.S.
- The "revolving door" of related employment benefits all participants in both countries

7. Known Health Harms of Radiation Exposure

- No safe dose of radiation exposure
- Infants and children are uniquely susceptible to harmful effects
- Japan raised radiation exposure limits for schools and playgrounds to 2,000 millirems per year
- Chernobyl's children suffered increased cancers, infant mortality, birth defects ...
- Cuba treated over 25,000 children from the Ukraine and Russia for leukemia
- World Health Organization and IAEA have shamelessly understated Chernobyl victims

9. Conclusions for Tri-County Area Residents to Consider

- The "unthinkable" needs to be rethought a disaster could happen here
- Limerick is 3rd on the Earthquake Risk List in the U.S. a real concern
- A disaster/meltdown can be triggered as a result of fire, human error, terrorist attack, equipment failure, or a catastrophic hurricane/tornado event
- Lesson to be learned from Japan redundant safety systems can fail
- Radioactive fuel rods are among the most deadly materials on earth
- -Transporting radioactive wastes is too risky to consider (photos of transport)
- We need to oppose approval of uprates by NRC
- We need to oppose renewal of Limerick's license for an additional 20 years by NRC
- Additional precautions are needed at Limerick (Extended back-up power, safest fire
- regulations, enhance protection against terrorist, extend EPZ to 50 miles, safer storage of spent fuel rods on site in above ground casks ...)

<u>Very Troubling - NRC Stall Tactics Avoiding Immediate Action</u> NRC Should Take Immediate Action

✓ The Study Below Shows NRC Has Known The Horrific Estimated Consequences of a Meltdown Since 1974

All About Meltdowns

Excerpts from the Reactor Safety Study (WASH-1400) (commonly known as the Rasmussen Report)

published by the US Nuclear Regulatory Commission in 1974

What is the bottom line as described in the Rasmussen Report?

MELTDOWN CONSEQUENCES - 1974 NRC Worst Case - Rasmussen Report

- 45,000 Cases Radiation Sickness (Requiring Hospitalization)
- 3,300 Prompt Deaths (From Acute Radiation Sickness)
- 45,000 Fatal Cancers (over 50 years)
- 250,000 Non-Fatal Cancers (over 50 years)
- 190 Per Year Defective Children Born

• \$14 Billion (1974 Dollars) Property Damage; NOT Insurable WHY SO CONCERNED ABOUT A MELTDOWN AT LIMERICK NUCLEAR PLANT?

Over 200 MELTDOWN RADIONUCLIDES

Reactor Safety Study (WASH-1400) (commonly known as the Rasmussen Report)
Published by the US Nuclear Regulatory Commission 1974

The Following 54 Are Among The Most Dangerous Radionuclides Released In A Meltdown With Half-Lives Up To 24,000 Years

Radioactive Inventory						
No.	Radionuclide	(Source Term in curies)	Half Life			
==	==========	=======================================	========			
1	Cobalt-58	780 thousand	10.1 weeks			
2	Cobalt-60	290 thousand	5.25 years			
3	Krypton-85	560 thousand	10.8 years			
4	Krypton-85m	24 million	4.4 hours			
5	Krypton-87	47 million	1.25 hours			
6	Krypton-88	68 million	2.8 hours			
7	Rubidium-86	26 thousand	2.67 weeks			
8	Strontium-89	94 million	7.4 weeks			
9	Strontium-90	3 million 700 thousand	30.2 years			
10	Strontium-91	110 million	9.7 hours			

		_				
11	Yttrium-90			390	thousand	2.67 days
12	Yttrium-91			120	million	
13	Zirconium-95			150	million	9.3 weeks
14	Zirconium-97			150	million	17.0 hours
15	Niobium-95			150	million	5.0 weeks
16	Molybdenum-99			160	million	2.8 days
17	Technetium-99m			140	million	6.0 hours
18	Ruthenium-103			110	million	5.64 weeks
19	Ruthenium-105	•		72	million	4.44 hours
20	Ruthenium-106			25	million	1.0 years
21	Rhodium-105			49	million	1.50 days
22	Tellurium-127	5	million	900	thousand	9.38 hours
23	Tellurium-127m	1	million	100	thousand	15.6 weeks
24	Tellurium-129			31	million	1.15 hours
25	Tellurium-129m	5	million	300	thousand	8.16 hours
26	Tellurium-131m			13	million	1.25 days
27	Tellurium-132			120	million	3.25 days
28	Antimony-127	6	million	100	thousand	3.88 days
29	Antimony-129			33	million	4.30 hours
30	Iodine-131			85	million	8.05 days
31	Iodine-132	_		120	million	2.30 hours
32	Iodine-133			170	million	21.0 hours
33	Iodine-134			190	million	53 minutes
34	Iodine-135			150	million	6.72 hours
35	Xenon-133			170	million	5.28 days
36	Xenon-135			34	million	9.2 hours
37	Cesium-134	7	million	500	thousand	2.05 years
38	Cesium-136			3	million	13.0 days
39	Cesium-137	4	million	700	thousand	30.1 years
40	Barium-140		•	160	million	12.8 days
41	Lanthanum-14 0			160	million	1.67 days
42	Cerium-141		-	150	million	4.6 weeks
43	Cerium-143			130	million	1.38 days
44	Cerium-144			85	million	40.6 weeks
45	Praseodymium-143	3		130	million	13.7 days
46	Neodymium-147			60	million	11.1 days
47	Neptunium-239	1	billion	640	million	2.35 days
48	Plutonium-238				thousand	89.0 years
49	Plutonium-239			21	thousand	24,000 years
50	Plutonium-240			21		6,571 years
51	Plutonium-241	_			thousand	14.6 years
52	Americium-241	1	thousand	1 7		410.7 years
53	Curium-242			500	thousand	23.3 weeks
54	Curium-244			23	thousand	18.1 years

The Truth Seldom Gets Told To Protect The Nuclear Industry

TABLE VI 3-1 Adapted From Appendix VI of WASH-140 - INITIAL ACTIVITY OF RADIONUCLIDES IN THE NUCLEAR REACTOR CORE AT THE TIME OF THE HYPOTHETICAL ACCIDENT

> The kind of meltdown accidents envisaged in WASH-1400 require a much more extensive evacuation plan than any that is currently envisaged in Canada, as indicated in this very brief excerpt from Appendix VI of WASH-1400. [comentary by Dr. Gordon Edwards]

Released In Fuel Rod Melting Accidents Over 200 Different Radioactive Substances

Yet, In Japan, Only Iodine And Cesium Are Reported

EXPOSURE RISKS NOT FULLY DISCLOSED

06/16/11 **NRC** hearing raises questions about safety at nuclear plants http://www.csmonitor.com/USA/2011/0615/NRC-hearing-raises-questions-about-safety-at-nuclear-plants The Christian Science Monitor - CSMonitor.com By Mark Clayton, posted June 15, 2011

A hearing of the Nuclear Regulatory Commission (NRC) pointed to apparent weaknesses in the regulation of nuclear plants. A safety task force staff ... noted that: • In many cases, older "vintage" plants that undergo relicensing examinations to operate an added 20 years are not required to bring those plants fully up to current safety standards.

- NRC regulations have never formally recognized the possibility of an extreme event like an earthquake or tornado simultaneously knocking out both on-site and off-site power at a nuclear plant, as happened at the Fukushima <u>Daiichi plant</u> in <u>Japan</u>.
- The nation's nuclear plants have "different licensing bases and associated safety margins," with variations among the plants depending upon their age.
- "Hardened vents" installed to protect US boiling water reactors with the same design as the <u>Fukushima</u> plant were "not included in regulations" and, as a result, were not subject to regular inspections to ensure that they operate properly in an emergency.
- Key valves associated with the hardened vents "were not specifically designed for operation during a long-term station blackout" and therefore might be difficult to open in the event of a Fukushima like incident. [Editor's note: The original version misstated the task force's finding on this point.]

NRC Whistleblowers

BOSTON (By Scott Malone) – U.S. regulators privately have expressed doubts that some of the nation's nuclear power plants are prepared for a Fukushima-scale...:

U.S. Nuclear Regulators Privately Doubted Power Plants Despite Expressing Public Confidence, Documents Show

Three former members of the Nuclear Regulatory Commission's Office of the Inspector General told ProPublica that the OIG's office has rewritten critical reports, buried other damaging reports and stopped an investigation into whether the NRC is relying on outdated methods to predict damage from an aircraft crashing into a plant. In a report by John Sullivan and PBS Newshour's Cameron Hickey, the <a href="https://www.whistleblowers.com/whistleblow

One whistleblower, George Mulley who was an award-winning chief investigator at the OIG, told ProPublica that a report he wrote detailed lapses by several NRC inspectors over six years and cited systemic problems in the way the NRC tries to prevent corrosion. "The revised report shifted much of the blame to the plant's owner, Exelon, instead of NRC procedures. And instead of designating it a public report and delivering it to Congress, as is the norm, the office put it off-limits."

Two other former OIG investigators told ProPublica that the OIG has become reluctant to probe anything that could become controversial or raise difficult questions for the NRC. Each asked not to be named to protect their current jobs.

Read the full account here - http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar - and see all of <a href="http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regulatory-commission-watchdog-is-losing-its-bar-regula

Thankfully some at NRC value public health and safety over nuclear industry profits. It we are to be protected from deadly, dangerous nuclear plants we need more at NRC to have integrity, soul, and caring.

Evidence of growing risk from U.S. meltdowns is everywhere, yet NRC is failing to see the urgency of taking immediate action to at least attempt to better guard against a meltdown.

- The need to shut down old, troubled plants like Limerick to minimize risk of meltdown is clear, yet
 NRC keeps rubber stamping permits.
- Our concerns are that NRC's Dual Role as a Promoter and Regulator is a dangerous conflict of interest that can lead to meltdown and disaster at Limerick. NRC's Promotion Far Outweighs Regulation - A fact ACE officers have witnessed all too often over the past 11 years.
- NRC is repeatedly turning a blind eye and falling down as the cop on the beat.
- NRC's check the box attitude can lead to a Limerick meltdown and disaster.
- NRC doesn't take the threats and harms seriously, a fact we have observed over and over.
- NRC is far too soft on nuclear enforcement, leaving us vulnerable to all kinds of risks for meltdown.
- NRC is clearly a captive of the industry it supposedly regulates. NRC executives are too cozy with industry. This has led to weakened safety standards that jeopardize our region's residents and the entire nation.
- NRC abandons its duty to be tough in regulatory authority to keep us safe, using deceptive and irrational terms to minimize risks and to protect industry profits like:
 - ✓ "Reasonably Expected Not to Fail"
 - ✓ "Safe Enough".
 - ✓ "We don't have to worry about particulates landing on us"
 - ✓ "Meltdown is no worry for the U.S. Industry has an excellent record" Absurd!!!!!
- NRC is not achieving safety standards due to money. It has happened at Limerick over and over.
 NRC has made comments and sent us correspondence that minimized risk to save Exelon money.
- NRC is not doing their job effectively when problems are identified, NRC fails to get industry to immediately correct them. Examples:
 - ✓ Instead of requiring fire safety compliance over the past several decades NRC allowed industry to make a different set of fire safety rules, which is what Limerick is using.
 - ✓ 102 of 104 nukes leaked radiation into groundwater and drinking water. Yet, NRC is allowing nuclear industry years more to come up with their own solution. We are concerned about spreading groundwater contamination at Limerick. Leaks were never cleaned up.
 - ✓ NRC ignored alarming corrosion for decades which ate through steel, yet allowed plant to go back on line.

NRC Needs To Do Far More Faster to Fortify Limerick Nuclear Power Plant. NRC NEEDS TO STOP MINIMIZING RISKS TO SAVE EXELON MONEY.

NRC OVERSIGHT - A DANGEROUS DELUSION

Many in our region have long been concerned about NRC's lax oversight and enforcement leading to a meltdown from accidents or a terrorist attack at Limerick Nuclear Plant.

- Claims that NRC oversight will prevent meltdowns are delusional. NRC's decisions are based largely on baseless "beliefs", NOT science or reality.
- NRC's track record They put nuclear industry profits ahead of public safety. NRC is too close to the industry. They promote nuclear power, not regulate it.
- NRC's negligence concerns many in our region.

ACE identified great cause for concern at Limerick. Examples Of NRC Negligence at Limerick Nuclear Plant:

- ✓ <u>FIRE</u> NRC acquiesced to nuclear industry convenience and bottom line by developing a second weaker set of fire safety standards which allow Limerick to deceptively claim compliance. NRC says it's "SAFE ENOUGH". Knowing fires can cause meltdowns, we need the safest fire barriers and other safeguards and object to "Reduced Regulatory Burden", "Exemptions", and "Flexibility".
- ✓ <u>TERRORISTS THREATS</u> NRC failed to require Limerick to guard against a 9/11 type terrorist attack by plane or missile. Either could lead to a nuclear fire and meltdown. Limerick Airport is about one mile away.
- ✓ <u>AL-QAIDA SUSPECT</u> worked at Limerick 2002 to 2007. How effective are NRC screening requirements for the 2000 workers that come to refuel each year?
- ✓ RADIOACTIVE FUEL RODS MOVED TOO SOON! NRC is allowing Limerick's high-level radioactive fuel rods to be removed from cooling pools far sooner than the 5 years originally considered safe.
- ✓ "REDUNDANT SAFEGUARDS" FAIL Safeguards that work on paper don't necessarily work during a real meltdown. Glaring vulnerabilities in the multiple layers of safeguards have become obvious.
- ✓ LOSS of POWER INADEQUATE BACK-UP POWER A "Station Blackout" (A Threat to All Nuclear Plants), poses the greater proportion of risk compared to all other factors that could lead to a meltdown, according to NRC studies 2003 and 2005. Yet, there is not enough back-up power at Limerick Nuclear Plant.
 - Limerick needs back-up power available for days, not just hours. A weather event shut down power in a neighboring community for five days recently.
 - Limerick needs enough back-up power for reactors and fuel pools
 - Limerick needs to test all generators more often. Like combustion engines, they don't always start if they have not been turned on for weeks.
 - Japanese batteries had 8 hours of power storage not long enough
 - The danger of power failure Total Blackout Risk National Average 17.5 percent.
 - Hurricane Andrew Turkey Point (Florida) lost off-site power for more than 5 days. Because Florida Power & Light Company (FPL) did not bring in a shift change by helicopter, the same crew worked around the clock to keep the generators going. One worker said they held it together basically with paper clips and rubber bands at one point, because diesel generators are really not designed to run continuously.
 - ✓ Hurricane Gustav (2008) River Bend shut down. Hurricane tore the sheet metal off three sides of the plant's turbine building.

Culture of Complicity Tied To Stricken Nuclear Plant New York Times 4-26-11

This Shows How Collusion Between Nuclear Power Companies, Regulators, and Politicians

JEOPARDIZES REGIONS AROUND NUCLEAR PLANTS

Japan's Nuclear Catastrophe Has Major Implications Related To Limerick Nuclear Plant Relicensing

The MOST SERIOUS SAFETY COVER-UP in the history of Japanese nuclear power happened at Fukushima. It was exposed by an outsider. In 2000, a Japanese-American nuclear inspector who did work for GE at Daiichi, told Japan regulators about a concealed, cracked steam dryer.

• Tokyo Electric Power didn't want to undertake costly repairs.

Despite a new law shielding whistle-blowers, the regulators divulged the whistle-blower's identity to TEPCO,

• Effectively blackballing the whistle-blower from the industry.

Investigators may take months to decide to what extent:

- Safety problems and/or weak regulation contributed to this worst disaster since Chernobyl. Japanese and Western experts believe non-consistent, nonexistent, or unenforced regulations played a role in the nuclear plant accident.
 - Despite warnings about its safety and subsequent admissions by Tokyo Electric, they failed to carry out proper inspections of critical equipment,
 - > <u>Just weeks before Japan's nuclear disaster, regulators approved a</u> 1-year extension, beyond the reactor's 40 year limit.

It's all about the money.

- Nuclear power's main players are more interested in protection of their interests than increasing safety. Consequences: Lax Inspections, Mild Punishment metered out for past safety infractions.
- Revolving door The Political Establishment (beneficiaries of the nuclear power industry), show little interest in bolstering safety.
- ✓ Lax regulations serve political interests. Costly renovations get in the way of building new plants.

ACE Conclusion:

Similar dangerous decisions could be made for the same reasons, risking meltdowns at our nuclear power plants.

ALARMING - NRC IS JEOPARDIZING OUR FUTURE

The Following List of Articles and Reports Provides Overwhelming Evidence That Residents Of The Philadelphia Region Will Likely Not Be Protected By NRC Now Or In The Future:

- ✓ Ineffective, Unprotective, Negligent Policies
- ✓ Weakened Regulations, Lowered Standards
- ✓ Unsubstantiated Conclusions, Failed Oversight

5-12-11 "The United States' nuclear reactors are old, faulty and dangerous – but regulators are ignoring the risks and boosting industry

profits" Rolling Stone Magazine article: "America's Nuclear Nightmare", documents that the NRC is "little more than a lap dog to the nuclear industry".

http://www.rollingstone.com/politics/news/america-s-nuclear-nightmare-20110427

09/05/11 NRC Exemptions, aka "No Significant Hazards" NRC's Dangerous Exemptions for nuclear plants can be documented in NRC's Biweekly Notices on Applications and Amendments to Nuclear Facility Operating Licenses. NRC posts them as "No Significant Hazard Considerations"

03/25/11 Report: Defects At U.S. Nuke Plants Not Reported WASHINGTON

(AP) -- Companies that operate U.S. nuclear power plants are not telling the government about some equipment defects that could create safety risks, according to a report released Thursday. An audit by the inspector general of the Nuclear Regulatory Commission also raised questions about the agency's oversight, saying reporting guidelines for the nuclear industry are "contradictory and unclear."

04/18/11 **U.S. Nuclear Regulator a Policeman or Salesman?** By Reuters - The Nuclear Regulatory Commission exists to police, not promote, the domestic nuclear industry--but diplomatic cables show that it is sometimes used as a sales tool to help push American technology to foreign governments. The cables, obtained by WikiLeaks and provided to Reuters by a third party, shed light on the way in which U.S. embassies have pulled in the NRC when lobbying for the purchase of equipment made by Westinghouse and other domestic manufacturers.

04/22/11 U.S. Nuclear Regulatory Commission oversight called too

lenient By SHAY TOTTEN New England Center for Investigative Reporting. Internal government watchdogs and outside experts alike say the U.S. Nuclear Regulatory Commission is too lenient on the industry it is charged with regulating, often making decisions based on the industry's profit margins rather than safety.

04/22/11 U.S. Nuclear Regulators Privately Doubted Power Plants Despite Expressing Public Confidence, Documents Show

www.huffingtonpost.com/2011/04/06/us-nuclear-regulators-doubts_n_845819.html_BOSTON (By Scott Malone) – U.S. regulators privately have expressed doubts that some of the nation's nuclear power plants are prepared for a Fukushima-scale disaster, undercutting their public confidence since Japan's nuclear crisis began, documents released by an independent safety watchdog group show. Internal Nuclear Regulatory Commission e-mails and memos obtained by the Union of Concerned Scientists questioned the adequacy of the back-up plans to keep reactor cooling systems running if off-site power were lost for an extended period.

May 7, 2011 Nuclear Agency Is Criticized as Too Close to Its Industry

New York Times By TOM ZELLER Jr.

Exelon Corporation, had long known that corrosion was thinning...pipes. But rather than fix them, it repeatedly lowered the minimum thickness it deemed safe. By the time the pipe broke, Exelon had declared that pipe walls just three-hundredths of an inch thick — less than one-tenth the original minimum thickness — would be good enough. ...Safety experts say if enough pipes had ruptured during a reactor accident, the result could easily have been a nuclear catastrophe. Exelon's risky decisions occurred under the noses of on-site inspectors from the federal Nuclear Regulatory Commission. No documented inspection of the pipes was made by anyone from the N.R.C. for at least the eight years preceding the leak, and the agency also failed to notice that Exelon kept lowering the acceptable standard, according to a subsequent investigation by the commission's inspector general.

N.R.C.'s decision to back down in a standoff with the operator of an Ohio plant a decade ago meant that a potentially dangerous hole went undetected for months. The number of civil penalties paid by licensees has plummeted nearly 80 percent since the late 1990s — a reflection, critics say, of the commission's inclination to avoid ruffling the feathers of the nuclear industry and its Washington lobbyists.

The agency's own internal monitors say the N.R.C. is prone to dither when companies complain that its proposed actions would cost time or money. The promise of lucrative industry work after officials leave the commission probably doesn't help, critics say, pointing to dozens over the years who have taken jobs with nuclear power companies and lobbying firms.

David Lochbaum,... who recently worked as a reactor technology instructor there, said the agency too often rolled the dice on safety. "The only difference between Byron and Fukushima is luck," he said.

NO REJCTIONS - Vermont Yankee nuclear plant ...has had several serious operational problems. That reactor is similar in design to the stricken plant in Japan and suffered the partial collapse of a cooling tower in 2007. In January 2010, the plant's operator, Entergy, discovered that nearby soil and groundwater had been contaminated by radioactive tritium, which had leaked from underground piping. Months before, the company assured state lawmakers that no such piping existed at the plant. The Vermont Senate, concerned about the problems, voted overwhelmingly last year to prevent the plant from operating beyond the scheduled expiration of its license, 2012. But one day before the quake and tsunami that set Japan's crisis in motion, the N.R.C. approved Vermont Yankee's bid for license renewal — just as it has for 62 other plants so far. Its fate is now the subject of a federal lawsuit.

- "How does a place like that get a license renewal?" Mr. Lochbaum said. "Because they asked for one. Absent dead bodies, nothing seems to deter the N.R.C. from sustaining reactor operation." No renewal application has been turned down by the agency since the first one was granted in 2000.
- With billions of dollars of revenue and investment at stake for each plant, the N.R.C. changed the rules in 1995, scrapping the requirement that operators prove they were complying with their current license. But James Riccio, a nuclear policy analyst with Greenpeace, said, "The N.R.C. rule change gutted a substantive process and replaced it with a rubber stamp. They placed industry profits ahead of public safety."

N.R.C.'s slowness in addressing serious problems is another concern.

- In 1975, a blaze at Browns Ferry plant crippled electrical wiring used to control critical cooling equipment in one of the reactor units. ...That triggered new fire protection regulations in 1980.
- But over the next three decades, according to two internal agency investigations, the commission approved a succession of faulty or ineffective fire barrier
 materials. It then dragged its feet in the face of mounting evidence that the materials, even after being installed in dozens of plants, were failing to perform
 as advertised.
- ...Thermo-lag, which the commission approved based on what turned out to be fraudulent lab tests submitted by an obscure company. "No inspector ever bothered to check out the lab or to question the results," said Mr. Mulley, who investigated the case for the agency.
- Last year, the N.R.C. issued a 355-page report in which it suggested that the fire barrier issue had been finally sorted out, even though most plants were technically still not complying with the regulations.

The agency has little choice but to tolerate violations, said Mr. Lochbaum, who heads the Nuclear Safety Project with the <u>Union of Concerned Scientists</u>, an environmental and nuclear watchdog group based in Cambridge, Mass. "Otherwise, nearly all the U.S. reactors would have to shut down." he said.

Mr. Mulley suggested that the companies themselves played a role in delaying the rules. ...But some plant operators kept complaining that they were too expensive. So tests from a lab that no one has ever heard of tested material cheaper than anything else on the market, and the N.R.C. says, 'Perfect! Use this!'

The agency's deferential attitude also brought Davis-Besse to the brink of the worst American nuclear accident since the Three Mile Island meltdown of 1979. On Aug. 3, 2001, armed with mounting evidence of potentially dangerous cracks and leaks in control nozzles that penetrate the vessel heads at most reactors, the commission asked 12 nuclear plants to conduct inspections. The inspections required a temporary but expensive shutdown, so regulators gave the plants until the end of the year to comply, and most did so. the N.R.C. blinked, agreeing to allow FirstEnergy to operate until mid-February.

- On March 6, 2002, workers finally conducted the inspections and found that acid used in the cooling water had eaten almost completely through the lid of the reactor.
- "They should have just shut them down," said Mr. Mulley, who investigated the case. "But the attitude at N.R.C. was always, 'You can't shut them down. They'll fight us in court.'"

Mr. Lochbaum said the slap on the wrist delivered to Exelon ensured that similar incidents would occur in the future. "There's no real regulatory discomfort imposed, so this sort of thing just continues,"

"The N.R.C. is like a prep school for many of these guys, because they know they've got a good shot at landing much higher-paying work with the people they're supposed to be keeping in line," Mr. Mulley said. "They're not going to do anything to jeopardize that."

05/20/11 Nuclear power safety: Latest on Japan crisis fuels new concern

in US http://www.csmonitor.com/USA/2011/0520/Nuclear-power-safety-Latest-on-Japan-crisis-fuels-new-concernin-US Nuclear Regulatory Commission still insists that US nuclear plants with same design as Japan's stricken Fukushima Daiichi facility are safe. But watchdog groups cite failed venting system, which led to hydrogen explosions.

05/22/11 Jaczko [NRC Chairman] says NRC has nothing on station

blackout "into the longer time frame" *(from NRC April 28 meeting on Japan and station blackouts) http://public-blog.nrc-gateway.gov/2011/04/22/the-nrc-were-ready-to-respond/. Amy Still May 14, 2011 at 12:36 pm Comments from the NRC Station Blackout Meeting, April 28th, 2011: http://www.nrc.gov/reading-rm/doc-collections/commission/tr/2011/20110428a.pdf

CHAIRMAN JACZKO: ...And I think...we don't necessarily look beyond 24 hours for this kind of situation, into the longer, longer time frame.' CHAIRMAN JACZKO:.but in the event that there is a station blackout, that's externally driven, I'm not convinced that, in that situation, four hours is a reasonable time to restore off-site power.

(ADDED by ACE - Limerick appears to only have battery back-up for 4 hours on generators, and no guarantee to keep cooling fuel pools in event of loss of power)

05/24/11 NRC Exempts Nuclear Power Plant Security (crytome.org)

http://cryptome.org/0004/nrc052411.htm

NRC Exempts Nuclear Power Plant Security

[Federal Register Volume 76, Number 100 (Tuesday, May 24, 2011)] [Notices] [Pages 30204-30205] From the Federal Register Online via the Government Printing Office [www.gpo.gov] [FR Doc No: 2011-12784]

06/02/11 Some fear U.S. nuclear agency is playing 'regulatory roulette' http://edition.cnn.com/2011/US/06/01/nuclear.plant.regulation/index.html

Radioactive spills are a problem nationwide. [102 of104 of the country's 104 reactors have suffered significant tritium leaks or spills]. The worst was at Exelon's Braidwood plant, in Chicago, which leaked more than 6 million gallons of radiation contaminated water into drinking water wells Many leaks are the result of corroding underground pipes that have not been maintained. That can lead to a variety of radioactive compounds entering groundwater, but tritium travels fastest through the soil.

New Jersey's Department of Environmental Protection is concerned about tritium entering the underground aquifers, and a plume of tritium headed toward Oyster Creek surface water. The state demanded Exelon clean up the contaminated groundwater. "Once that water moved off the plant into the water supply of the state of New Jersey, we felt that it was in our responsibility to go after and protect that water supply," said New Jersey Department of Environmental Protection Commissioner Bob Martin. "...our number-one job was to protect the health and safety of people in New Jersey."

The groundwater is processed through the Oyster Creek plant's cooling system, where it is diluted. Then it pours into the Oyster Creek.

The commission did not order Exelon to clean up the spill at Oyster Creek, an example, some scientists claim, of the agency's failure to fully protect the public. "The NRC's almost acting like they're waiting till somebody dies till they enforce the regulation. Tombstone regulation -- that's too high a price to pay by Americans," said David Lochbaum, director of the Nuclear Safety Project of the Union of Concerned Scientists. Lochbaum, a nuclear engineer and former instructor for the NRC, claims the commission is playing what he calls "regulatory roulette," sanctioning plant owners and demanding a clean-up in some cases, such as the Braidwood spill, but not in other instances, like Oyster Creek. "The NRC can't have a 'Wheel of Misfortune' that decides when it acts and when it doesn't. The NRC needs to consistently enforce its regulations so that all Americans living in all states are protected," Lochbaum said.

Last year NRC conducted a self-analysis to determine if it was responding adequately to nuclear plant leaks. The commission's Groundwater Task Force found that the "NRC response to incidents could be enhanced to be more reliable." "It's fair to say that we're inconsistent in our response," concedes Martin Virgilio, deputy executive director for reactor and preparedness programs at the commission.

06/16/11 NRC hearing raises questions about safety at nuclear plants http://www.csmonitor.com/USA/2011/0615/NRC-hearing-raises-questions-about-safety-at-nuclear-plants
The Christian Science Monitor - CSMonitor.com By Mark Clayton, posted June 15, 2011

A hearing of the Nuclear Regulatory Commission (NRC) pointed to apparent weaknesses in the regulation of nuclear plants. A safety task force staff ... noted that: • In many cases, older "vintage" plants that undergo relicensing examinations to operate an added 20 years are not required to bring those plants fully up to current safety standards.

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- The nation's nuclear plants have "different licensing bases and associated safety margins," with variations among the plants depending upon their age.
- "Hardened vents" installed to protect US boiling water reactors with the same design as the <u>Fukushima</u> plant we
 e "not included in regulations" and, as a result, were not subject to regular inspections to ensure that they
 operate properly in an emergency.
- Key valves associated with the hardened vents "were not specifically designed for operation during a long-term station blackout" and therefore might be difficult to open in the event of a Fukushima like incident. [Editor's note: The original version misstated the task force's finding on this point.]

When new safety issues emerge, nuclear plants – old or new – undergo an NRC "back fit" review to see if additional safety requirements should be imposed, notes <u>Edwin Lyman</u>, a nuclear expert at the <u>Union of Concerned Scientists</u>, a nuclear industry watchdog group. But any back fit, unless required by existing regulations to bring a facility into compliance, must pass a cost-benefit test they often fail, ending with the recommended changes not being made, Dr. Lyman says. That position runs counter to rising concerns among international experts. A <u>International Atomic Energy Agency</u>, letter called for older reactors to have special oversight. If they could not meet contemporary standards, they should be closed.

At the hearing, other safety issues popped up raising questions about whether the NRC's regulatory system was as tight as it has been portrayed. Miller's testimony that the "hardened vents" were not part of an inspection regime to ensure they would function in an emergency was in contrast to NRC assurances early after the Fukushima event. "It really shows the emperor has no clothes," Dr. Lyman of UCS says. "As it turns out, Japan also had hardened vents, but had issues accessing and opening valves. Now the NRC is admitting they don't have hardened vent inspections. As a result, they haven't actually analyzed the issue of the functionality of the system in extreme events."

06/16/11 "Nuclear Never Safe" - Direct Communication to NRC & US Senate

http://www.greenpeace.org/usa/en/news-and-blogs/campaign-blog/nuclear-never-safe/blog/35323

Despite NRC testimony and the propaganda spewed by industry lobbyists, nuclear is never safe. No nuclear plant in the United States or on the planet can withstand a meltdown of the radioactive fuel rods. All of the containments will fail because they were never designed to withstand the forces unleashed by a core meltdown; they were designed to withstand pipe break. Rather than dither over regulations that are insufficient to protect the public health and safety, the United States should follow the lead of Germany, Switzerland and Italy and begin phasing out nuclear reactors and replacing them with clean renewable energy. Managing the end of the nuclear era is a daunting task but we need to begin the transition now. We need to shutdown nuclear reactors before they meltdown and devastate the US like they have in the Ukraine and now Japan.

06/27/11 New Exposé Reveals Nuclear Regulatory Commission Colluded with Industry to Weaken Safety Standards

Democracy Now! digest@democracynow.org

Three U.S. senators called for a congressional probe on safety issues at the nation's aging nuclear plants following a pair of new exposés.

 In a special series called "Aging Nukes," the Associated Press revealed that the U.S. Nuclear Regulatory Commission and the nuclear power industry have been working in tandem to weaken safety standards to keep aging reactors within the rules. Just last year, the NRC weakened the safety margin for acceptable radiation damage to reactor vessels.

The nuclear industry and their government regulators have been working together to lower safety standards as aging nuclear systems and parts and plants come close to violating those standards and those rules. And that's been a pattern for decades now, and we're seeing a lot of it as these plants get older and older.

2. The AP report also revealed radioactive tritium has leaked from 48 of the 65 U.S. commercial nuclear power sites, often into groundwater from corroded, buried piping. Leaks from at least 37 of those facilities contained concentrations exceeding the federal drinking water standard—sometimes at hundreds of times the limit.

Plants had piping buried underneath, underground, covered underground for so long the piping can't be properly inspected. It's rarely looked at carefully, visually. It's rarely dug up. And it's been so long now that a lot of that is corroding, and you have leaks, that we've documented, at three-quarters of the sites.

✓ A Government Accountability Office, the congressional investigative arm, had a report released a that the Nuclear Regulatory Commission, the federal regulators say there have been either leaks or spills of tritium and other radionuclides at all the plants. Lots of cases you see other more powerful radioactive substances that do more health harm than tritium, in equal amounts, after you see the tritium

Parts or systems are coming close to the standard, even sometimes violating the standard.

Again and again standards are lowered. Regulators sometimes can't get the systems and parts back within the rules, so then they begin issuing waivers or amendments or special exceptions that still allow the nuclear plants to keep running.

GAO report points out that industry and the regulators don't really have a good handle on what's happening in those pipes and vaults and all that equipment under the ground. And they don't have technologies that allow them to see that very well. GAO report says we don't really know about how bad the leaks are and that bears on public health.

It raises questions about the integrity of the plants, about the integrity of their cooling systems. Some piping carries water that's used to cool the reactors. And in an emergency, as we saw in Japan, you desperately need that water to cool the reactors, because the radiation produces a lot of heat, and you've got to keep it cool. What do all these leaks say about the integrity of that piping and, even in a broader sense, about the integrity of a lot of parts that can't easily be seen in nuclear power plants, like all those miles of electrical cable underneath the power plants that are needed by the operators to see what's going on in the plant.

One of the biggest areas of aging difficulties has been in so-called embrittlement of the steel around the reactors. And what that means is that if you bombard something with neutrons from a chain reaction for years and years, like the one that goes on inside reactors, it gets more brittle. As it gets more brittle, it's more likely to suddenly shatter, to break. The vessels are these gigantic steel tubs that surround the chain reaction, the radioactive fuel, and they provide a shield from it, and they hold it. They keep the area around it safe. And so, over the years, they've got increasingly brittle. One reactor in the early 1990s, Yankee Rowe in Massachusetts, was closed largely because of concerns about its vessel getting brittle.

Government and regulators started to notice that reactors were approaching the embrittlement standard for the vessels, and in some cases even violating that standard. Instead of saying, "OK, what can we do to get the reactors back within the standard? Is it possible to do a process called annealing, that would make them less brittle? Is it possible to replace them?" Industry and government launched another round of research, then decided, "We can back off a little bit on the standard and allow the vessels to become more brittle." That's continued. A second round took place that just culminated in the last year or two, where they raised that safety standard again, claiming "We didn't need to be so strict." In other words, "We didn't need to be so safe. It's safe enough."

06/27/11 Fudging nuke numbers

http://news.bostonherald.com/news/opinion/editorials/view/20110626fudging_nuke_numbers/srvc=home&position=recent By Boston Herald Editorial Staff | Sunday, June 26, 2011 | http://www.bostonherald.com | Editorials

Many aging nuclear power reactors have won extensions of their operating licenses. More are trying to. The disturbing news is that a major study by The Associated Press has found that government inspectors have been relaxing standards right and left to permit the award of extensions.

06/28/11 AP IMPACT: NRC and industry rewrite nuke history

07/27/11 Whistleblowers Say NRC Watchdog Is Pulling Its Punches. "NRC Shied Away From Challenging...When We Need Them Most"

Three former members of the Nuclear Regulatory Commission's Office of the Inspector General told ProPublica that the OIG's office has rewritten critical reports, buried other damaging reports and stopped an investigation into whether the NRC is relying on outdated methods to predict damage from an aircraft crashing into a plant.

In a report by John Sullivan and PBS Newshour's Cameron Hickey, the <u>whistleblowers say the OIG has shied away from challenging the NRC right when we need them most in the aftermath of the Fukushima meltdown.</u>

One whistleblower, George Mulley who was an award-winning chief investigator at the OIG, told ProPublica that a report he wrote detailed lapses by several NRC inspectors over six years and cited systemic problems in the way the NRC tries to prevent corrosion. "The revised report shifted much of the blame to the plant's owner, Exelon, instead of NRC procedures. And instead of designating it a public report and delivering it to Congress, as is the norm, the office put it off-limits."

Two other former OIG investigators told ProPublica that the OIG has become reluctant to probe anything that could become controversial or raise difficult questions for the NRC. Each asked not to be named to protect their current jobs.

Read the full account here - http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar - and see all of <a href="http://www.propublica.org/article/whistleblowers-say-nuclear-regulatory-commission-watchdog-is-losing-its-bar - and see all of <a href="http://www.propublica.org/article/whistleblowers-say-

07/28/11 Markey: NRC Stands For "No Recommendations Considered" It is now clear that the NRC will not act quickly to even vote on, let alone adopt, the safety upgrades recommended by some of the Commission's most senior technical staff.

"Commissioners Ostendorff, Magwood and Svinicki have made it all too clear that they believe that the Nuclear Regulatory Commission stands for "No Recommendations Considered," said Rep. Markey. "They have done this country a tremendous disservice in their collective votes to ensure that the NRC will not lead efforts to ensure the safety of the nuclear industry sector in this country, but will instead actively aid and abet the nuclear industry's dilatory efforts to ignore, perhaps indefinitely, the recommendations of the Commission's expert and dedicated staff."

By <u>MATTHEW L. WALD</u> 07/29/11

N.R.C. Lowers Estimate of How Many Would Die in Meltdown

The health effects of a catastrophic meltdown were hypothetical until the <u>1979 accident at Three Mile Island</u>. That <u>destroyed a billion-dollar reactor</u> but caused no apparent physical harm to nearby residents, immediately or over time. Debate has persisted over whether the United States skirted a disaster or whether that accident was about as bad as it could get.

Edwin Lyman, a nuclear physicist with the Union of Concerned Scientists, contends that the nuclear commission has consistently painted an overly rosy picture and that its latest study does as well. He noted that the study assumed a successful evacuation of 99.5 percent of the people within 10 miles, for example. The report also assumes "average" weather conditions, he noted. But if a rainstorm were under way during a release of radioactive materials, he said, it could wash contaminants out of the air into a small area, producing a high dose there.

Jennifer L. Uhle, the deputy director of the commission's office of nuclear regulatory research, said the report was intended to present the "best estimate" and not the worst case.

Dr. Lyman said the earlier estimate was of a different accident, a major pipe break. The new study considered that accident too unlikely to analyze.

Dr. Lyman suggested that in projections of fatal cancer cases, the focus should be on people who live within 50 miles. The average population within 10 miles of an American nuclear plant is 62,000; within 50 miles, it is about five million.

The commission's old projection of eventual cancer deaths was one for every 2,128 people exposed within 50 miles; the new study projects one cancer death for every 6,250 people exposed, which still comes to hundreds of cancer deaths within the 50-mile circle, in addition to the hundreds of thousands who would be expected to die of cancer from other causes.

Dr. Lyman countered that when dealing with estimates based on so many variables — including more than 100 reactors of different designs and vintage, in areas with disparate population densities — a difference of a factor of three is not important. In his view, the study

07/30/11 UPDATE: US Nuclear Industry Group Backs 5-Year Timeline For Safety Changes (nasdaq)....who's in charge ????

By Ryan Tracy Of DOW JONES NEWSWIRES http://www.nasdag.com/aspx/stock-market-news story.aspx?storyid=201107261325dowjonesdjonline000358&title=updateus-nuclear-industry-groupbacks-5-year-timeline-for-safety-changes

UPDATE: US Nuclear Industry Group Backs 5-Year Timeline For Safety Changes\

- -- Industry group chief supports some changes, questions others
- -- Nuclear group CEO Fertel: near-term costs 'not terribly expensive'
- -- Fertel: nuclear agency should decide how to proceed by end of week (Updates throughout including additional background starting in fourth paragraph and additional comment from Fertel starting in fifth paragraph.)

Populations around some nuclear plants have swelled as much as 4 1/2 times since 1980, but some estimates of evacuation times have not been updated in decades. Meanwhile, aging reactors have been operating at higher power, risking larger radioactive releases.

An NRC task force recommended a series of changes last month to increase protection at U.S. nuclear sites, including better response to prolonged power blackouts or damage to multiple reactors. The commission set an Oct. 3 deadline for staff to recommend action on 11 of 12 task force recommendations. Staffers were given 18 months to consider a broader recommendation to revamp the agency's overall approach to regulation and safety.

09/02/11 Nuclear Energy Advocates Insist U.S. Reactors Completely Safe Unless Something Bad Happens

http://www.theonion.com/articles/nuclear-energy-advocates-insist-us-reactors-comple,19740/ - UCS and the ONION -eerily similar in interpretation of NRC's reckless, unsubstantiated reassurances about U.S. nuclear plants.

WASHINGTON- Nuclear Regulatory Commission sought to reassure nervous Americans that U.S. reactors were 100 percent safe and posed absolutely no threat to the public health as long as no unforeseeable system failure or sudden accident were to occur. "With the advanced safeguards we have in place, the nuclear facilities in this country could never, ever become a danger like those in Japan, unless our generators malfunctioned in an unexpected yet catastrophic manner, causing the fuel rods to melt down," said NRC chairman Gregory Jaczko, insisting that nuclear power remained a clean, harmless energy source that could only lead to disaster if events were to unfold in the exact same way they did in Japan, or in a number of other terrifying and totally plausible scenarios that have taken place since the 1950s. "When you consider all of our backup cooling processes, containment vessels, and contingency plans, you realize that, barring the fact that all of those safety measures could be wiped away in an instant by a natural disaster or electrical error, our reactors are indestructible." Jaczko added that U.S. nuclear power plants were also completely guarded against any and all terrorist attacks, except those no one could have predicted.

09/16/11

WSJ-Financial Pressure Reduced E'quake Standards

"We were under a lot of pressure to ease up on standards from nuclear-plant engineers who felt the 2006 revisions were too strict and weren't practical or economically feasible for commercial reactors," he said..... While industry pushed the standard-setters to ease up in 2006, some critics at the time said they were too lenient.

"We didn't focus on worst-case scenarios, but rather what were believed to be the most likely outcomes," said Mr. Irikura, 71, who coedited a book on advanced seismic-hazard assessment published earlier this year. "The risk of outliers like tsunamis was evaluated, but our advice...was that plant operators should be aware of these—not necessarily to expect them to occur."

NRC's Failure To Value Human Life and The Environment By Taking Immediate Action Is Mind-Boggling, Given Documented Evidence Of Increased Risk.

The risk that an earthquake would cause a severe accident at a U.S. nuclear plant is greater than previously thought, 24 times as high in one case, according to an AP analysis of preliminary government data.

The nation's nuclear regulator believes a quarter of America's reactors may need modifications to make them safer.

Limerick is among 27 in the eastern and central U.S. that a preliminary Nuclear Regulatory Commission review has said may need upgrades.

Those plants are more likely to get hit with an earthquake larger than the one their design was based on. It is negligent for NRC to allow and wait for operators to recalculate their own seismic risk.

> <u>SELF-EVAULATING BY THOSE WITH A VESTED INTEREST IN THE OUTCOME IS INSANITY, ESPECIALLY WHEN AN APOLOCLYPTIC OUTCOME IS IN THE BALANCE.</u>

Meltdowns Are An Apocalyptic Threat To Our Environmental, Health, and Financial Future

Actual Harms and Damage From Meltdowns Have Been Covered-Up Devastating Consequences Are Being Hidden Right Now In Japan

THE TRUTH NEEDS TO BE RECOGNIZED NOW - LOOK AT REALITY

Three Mile Island Partial Meltdown March, 1979

Radioactive fallout escaped from TMI, scattered randomly throughout the region, and landed heavily on parts of the downwind population. Radiation monitors in that direction were not working, so when anyone claims not much radiation escaped, that is an unsubstantiated claim. Human beings (as well as wild and farm animals) were killed and maimed in great numbers http://www.ratical.org/radiation/KillingOurOwn/KOO.pdf

- Cancers, leukemia, stillbirths, birth defects and malformations, sterility, emphysema, asthma, heart attacks, strokes, skin lesions, and other radiation-related diseases erupted throughout central PA. Such ailments also ripped through the animal population.
- By early 1980s about 2400 central Pennsylvania families claimed bodily harm and death from TMI fallout and sued, but never got a public hearing in federal court. To this day there has been no public hearing to compensate some 2400 central Pennsylvania families who claimed bodily harm and death from the plant's fallout.
- 1991 Dr. Hatch, Columbia University, published journal articles showing a huge 64% increase in cancer rates within 10 miles of TMI. Substantial increases were documented in each type of cancer studied, including leukemia, lung cancer, non-Hodgkins lymphoma, and child cancer. (1975-1979 1731 cases) (1981-1985 2831 cases)
- This remains one of the most heavily censored secrets of the nuclear age. The true story of what really happened to TMI's downwinders has never cracked the corporate media.
- Three decades of the "BIG LIE" continue to this day with epic distortions to deny the truth about the consequences of the Three Mile Island meltdown. The industry and their paid consultants continue to falsely claim that "no radiation escaped" and "no one was harmed".

In Reality, TMI May Be Responsible For Thousands Of Deaths According To:

"Deadly Deceit: Low Level Radiation - High Level Cover-up"

By Jay Gould and Ben Goldman, 1990 Gould Suggests Between:

50,000 To 100,000 EXCESS DEATHS Occurred After The TMI Accident

- Infant Deaths Soared In Counties Surrounding TMI 53% 1st Month 27% 1st Year
- Birth Defect Deaths Higher In 10 Counties Closest to TMI 15% to 35%

TMI is Still Operating - Accidents Are Still Happening November, 2009 - Another accidental radiation release at Three Mile Island.

Exelon, owner of TMI, was forced to evacuate 150 workers.

- Exelon said radioactive dust "unexpectedly blew out of a pipe being cut by workers."
- A November 23, 2009 Philadelphia Inquirer article said some state and local officials, including Governor Rendell, were
 upset that notifications were not made in a timely way to authorities.
- Even though measurements were not taken off-site for all types of radiation released, at various distances and directions, TMI and the Nuclear Regulatory Commission (NRC) claimed yet another "perfectly safe" accidental radiation release.

CHERNOBYL MELTDOWN April, 1986

The Chernobyl reactor exploded, spewing radiation across the earth.

Chernobyl: Consequences of the Catastrophe for People and the Environment, a newly translated report originally in Russian and published by the New York Academy of sciences shows that:

- By 2004, 985,000 additional deaths worldwide were caused by the Chernobyl disaster.
- This report summarizes published data from many regions contaminated by radioactive fallout, and is based on over 5000 studies, www.nyas.org. Consulting Editor - Dr. Janette Sherman: toxdoc.js@verizon.net
- This book proves the Chernobyl reactor explosion effects were far greater than claimed, especially for Children. Children have been and continue to be particularly affected with multiple adverse health outcomes. Before Chernobyl exploded, eighty percent of children were considered healthy. After the explosion only twenty percent of children are healthy in some areas.
 - Many children experienced poor development, learning disabilities, and endocrine abnormalities.
 - Of great concern are increased prenatal and infant mortality and birth defects among those not even born at the time of the catastrophe.
- Cuba, one of dozens of countries treating the sick, put out a completely ignored news story this year that they have treated over 25,000 children for leukemia from the Ukraine and Russia. Cuba's data have been ignored simply because the pro-nuclear IAEA can get global coverage that only 50 people died using claims that are now over 20 years old.
- Other illnesses increased, including those of the heart, thyroid, kidney, bone, lung, cataracts among the young, accelerated aging, and immunological abnormalities.
- 2005 estimates by the Chernobyl Forum (a group of UN agencies) misleadingly claim 9,000 cancer deaths in the same areas over the same time.
- The Chernobyl nuclear power explosion released hundreds of times more radiation than the bombs dropped on Hiroshima and Nagasaki. Radioactive contamination spread across the entire northern hemisphere, exposing 400 million people.
- Impacts to the 600,000 workers who were forced to clean up Chernobyl without proper protective gear have been ignored.
- Large numbers of people were never removed from contaminated regions.
- Many life systems were studied including humans, wolves, livestock, birds, fish, plants, mushrooms, bacteria, and viruses. Most all were changed by radioactive fallout, many irreversibly.

1986 to 2006 - A report revealed nearly 200 U.S. Nuclear Plant near misses.

A report was released in 2006 by Greenpeace, based on NRC documentation, titled,

"An American Chernobyl: Nearly 200 Nuclear "Near Misses" at U.S. Reactors Since 1986.

• Jim Riccio, Greenpeace nuclear policy analyst said, "This report shows that nuclear power plants are a clear and present danger and that each reactor is a potential Chernobyl. To call nuclear reactors clean and safe is the height of hypocrisy,"

One of those almost evacuated Detroit

October, 1966 - Fermi Fast Breeder Reactor Accident in Monroe Michigan

Human error led to a coolant stoppage at the Fermi Reactor in Monroe, Michigan, 45 miles south of Detroit

- John G. Fuller's WE ALMOST LOST DETROIT, published by Reader's Digest Press, provides hair-raising details. Fuller reported on the horrifying story of an entire industry's incompetence, dishonor, fallout and cover-up.
- For a full month area law enforcement weighed the possibility of evacuating Detroit.
- It could have quickly killed thousands of people and permanently poisoned most or all of the Great Lakes, the world's largest bodies of fresh water.

The truth about nuclear plant disasters has been distorted and hidden by the industry, their regulators, supporters, and even the corporate owned media. Documented facts below make it clear that NRC should consistently require all the most stringent fire safety regulations to be followed without exceptions, to prevent a nuclear plant disaster.

> THE TRUTH MUST BE TOLD FOR PRECAUTION AND PREVENTION!

We simply can't afford a disaster at Limerick Nuclear Power Plant, in human, environmental, or financial costs. It is unacceptable for NRC to continue to be evasive about Limerick Nuclear Power Plant's full compliance with all of the most protective, stringent regulations.

Think What A Meltdown Would Mean At Limerick Nuclear Plant

Limerick Nuclear Plant Accident Calculations - Reported to Congress in 1982
Accident Statistics Calculated For Limerick Nuclear Plant - 1980 numbers

- ✓ 74,000 Early Fatalities
- ✓ 610,000 Early Injuries (most for any U.S. reactor)
- ✓ 34,000 Cancer Deaths

Numbers above from 1980 would be more than double today.

2000 Census Shows Limerick Area Population Growth

- ✓ 1980'S 26 % INCREASE
- √ 1990'S 102% INCREASE

POPULATION HAS INCREASED BY 183% SINCE THEN.

Estimated Costs For An Accident or Terrorist Attack At Limerick In 2004 Dollars \$417 Billion – Limerick 1 \$386 Billion – Limerick 2

COSTS ARE NOW ESTIMATED AT OVER \$1 TRILLION

EVERY PRECAUTION SHOULD BE TAKEN NOW, INCLUDING CLOSING LIMERICK

LIMERICK CAN'T BE MADE FAILSAFE There Is Too Much At Stake For Too Many People!

- > Over 8 Million People Live Within 50 Miles Of Limerick Nuclear Plant
- > Philadelphia Is Just Over 20 Miles Downwind, Downstream
- > Limerick's Evacuation Zone Should Be 50 Miles NOT 10

History Shows A 10-Mile Evacuation Zone Is Not Protective.

• Residents Within 50 Miles Of Fukushima Were Told to Evacuate or "Shelter In Place".

Safe Evacuation Is An Illusion

- Traffic Gridlock Even In Rush Hour Shows Why
- There Is Not Enough Shelter and Supplies
- In The 10 Mile Zone There Has Been Enormous Population Growth Since 1980
 183% INCREASE in Population From 1980 to 2010 (2000 and 2010 Census Data)

The Alliance For A Clean Environment 1189 Foxview Road Pottstown, PA 19465

April 11, 2011

Paul Krohn, NRC Branch Chief Nuclear Regulatory Commission, Region 1 475 Allendale Road King of Prussia, PA 19406-1415

Dear Mr. Krohn.

The disaster in Japan caused nuclear reactors to leak radiation at dangerous levels. That nuclear disaster highlights the risks millions of residents face in the event of a similar catastrophe at Limerick Nuclear Power Plant.

The Nuclear Regulatory Commission (NRC) identifies Limerick Nuclear Plant as 3rd highest risk of catastrophic failure due to an earthquake out of 104 in the U.S. But an earthquake is just one of several things that cause a Limerick nuclear disaster.

The Japan nuclear disaster was caused by loss of cooling water which could also be caused by:

- ✓ Loss of power Limerick back-up power is inadequate (only hours, not days).
- ✓ Fire Limerick is not following the safest fire safety regulations.
- ✓ Terrorist Attack Limerick is not required to guard against a 9/11 type terrorist attack with a plane or missile.
- ✓ Accidents Happen Through Mechanical Breakdown and Human Error i.e. Chernobyl, TMI

NRC cannot guarantee that a disaster will not occur at Limerick. Given the catastrophic consequences of a Limerick disaster, NRC's "confidence" and "expectations" that Limerick Nuclear Plant is "safe enough" are no longer good enough. Prevention and Precaution are imperative. We need NRC to:

- 1. Require back-up power for several days.
- 2. Require the safest, most protective fire safety procedures.
- 3. Stop allowing Exelon to remove fuel rods from the pools before the required 5 years.
- 4. Require Exelon to guard against a missile or air strike by plane causing fire from fuel.
- Require more on site water storage. There is no ocean to keep Limerick's fuel rods and reactor cooled down for days or weeks. The only body of water near Limerick is the drinking water source for almost 2 million people.

We must also have an expanded evacuation zone in the event the worst happens. Americans in Japan within 50 miles of the Fukushima nuclear reactor were advised to evacuate. It is obvious that a 10-mile evacuation zone around Limerick Nuclear Plant was a political decision that is woefully inadequate. A 2006 report compiled from NRC records shows that Limerick is one of the nuclear plants with substandard containment, which means more radiation would be released. Being a GE Mark 2 design, it is even similar to the reactors in Japan.

Nearly 8 million people live within 50 miles of Limerick Nuclear Plant, but there are no plans for a 50-mile evacuation. Philadelphia is just 21 miles away. Is such an evacuation even conceivable?

Our entire region's residents are already continuously exposed to Limerick Nuclear Plant's routine radiation emissions and now Japan's radioactive fallout. Logic tells us that the additive, cumulative, and synergistic impacts from the broad range of radionuclides from all routes of exposure to which we are exposed could be harmful, especially to the most vulnerable among us, the children, sick, and elderly.

It is deceptive and even shameful to suggest we are safe from Limerick or Japan's low-level radiation because we are continuously exposed to background radiation, planes, bananas, etc. Those are additive doses, which make us more at risk from Limerick and Japan's so-called low levels of radiation, not less.

The National Academy of Sciences Report, as well as Physicians for Responsibility, say there is no safe level of exposure to radiation. Immediately after the Japan disaster started, NRC simply raised permissible radiation dose limits from 360 millirems per year to 620 millirems per year, legally sanctioning increased radiating harm. Limits were previously raised after Chernobyl from 80-100 millirems per year to 360 millirems per year. Obviously, permissible does not mean safe. It would be far more helpful if NRC would work on programs to teach people ways they could reduce harmful impacts from these unacceptable radiation exposures.

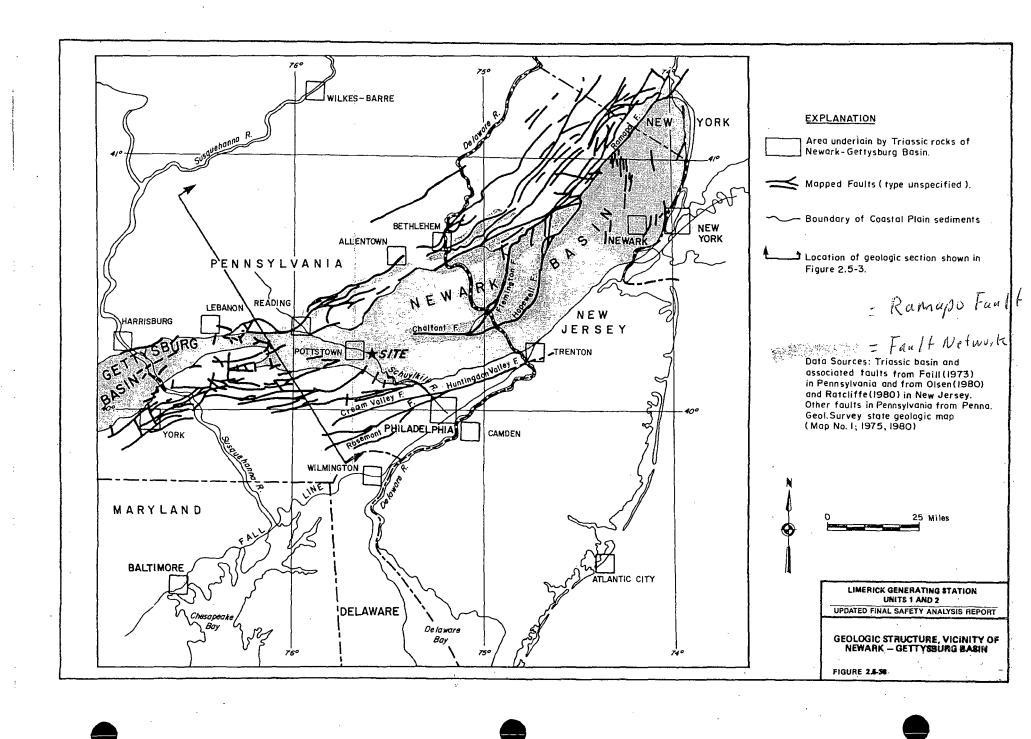
NRC has a responsibility to keep our beautiful region from becoming permanently uninhabitable, with its soil, vegetation, and water supplies contaminated for generations to come. We urge immediate action on the safety procedures listed above to protect our homes and families. Increased prevention and precaution are imperative.

Respectfully,

Dr. Lewis Cuthbert ACE President

CC:

Senator Bob Casev Senator Pat Toomev Congressman James Gerlach Congressman Charles Dent Governor Tom Corbett PA Senator John Rafferty PA Senator Andrew Dinniman Philadelphia Mayor Nutter Representative Tom Quigley Representative Mike Vereb Representative Tim Henessey Montgomery County Commissioners **Chester County Commissioners** Pottstown Borough Council Phoenixville Borough Council Royersford Borough Council Limerick Township Supervisors East Coventry Supervisors East Vincent Supervisors Upper Providence Supervisors **New Hanover Supervisors** Perkiomen Supervisors North Coventry Supervisors **Lower Pottsgrove Commissioners Upper Pottsgrove Commissioners** West Pottsgrove Commissioners





UNITED STATES NUCLEAR REGULATORY COMMISSION

REGION I 475 ALLENDALE ROAD KING OF PRUSSIA, PENNSYLVANIA 19406-1415

September 26, 2011

Lorraine Ruppe 2120 Buchert Road Apartment # 20 Pottstown, PA 19464

Mrs. Ruppe:

This letter is response to a question you brought up to Nicole Sieller, the NRC Resident Inspector at the Limerick Generating Station during the September 22nd Limerick Licensee Renewal Meeting concerning the location of the Ramapo fault and how close it comes to the Limerick Generating Station. I spoke with you on Friday September 23rd on the phone and am sending you a copy a Geologic Structure Map from the Limerick Updated Final Safety Analysis Report which illustrates the Ramapo Fault and other known fault lines in the PA-NJ area. I highlighted the Ramapo Fault itself in Yellow (Note the fault is non contiguous on the western side) and the Ramapo fault network in Orange, which includes the Chalfont, Hopewell, and Flemington Faults which branch off the Ramapo Fault. The Chalfont Fault is approximately 9 miles from Limerick to the east. The Ramapo Fault itself is approximately 17 miles from Limerick to the northwest near Reading.

I hope this answers your question. Feel free to contact me at 610-337-5199 or Andrew.Rosebrook@NRC.gov if you have any additional questions or concerns.

Respectfully,

Andrew A. Rosebrook Senior Project Engineer

USNRC, Region I

Enclosure: Geologic Structure, Vicinity of Newark-Gettysburg Basin.

Thursday, March 17, 2011 • Pottstown PA

Nuke plant ranked 3rd on quake-risk list

By Evan Brandt ebrandt@pottsmerc.com

LIMERICK – Data in a Nuclear Regdatory Commission study released less han a year ago has led an MSNBC inestigation to conclude that Exelon Nulear's Limerick Generating Station is he third most at risk of damage from. he United States.

The ranking takes on particular sigtrapple with a cascading nuclear disister caused by a Pacific Ocean earthjuake and subsequent tsunami on March 11.

The NRC study came about as a result of the U.S. Geologic Survey's 2008 up-

LIMERICK

dating of earthquake risks around the country, which used better data and more sophisticated measurements and modeling than were used in the 1996 and 2002 efforts.

As a result of the new seismic data, the arthquake of all 104 nuclear plants in NRC study looked at all 104 nuclear plants in the country and increased the risk probability of an earthquake damagnificance as the world watches Japan ing many of them. In fact, only eight had their risk of earthquake damage lowered. MSNBC reported.

> The risk of an earthquake damaging either or both reactors at Limerick was increased by 141 percent, now making it the third most at risk, after the Pilgrim

Nuclear Plant in Plymouth Mass. and the Indian Point Atomic Generating Station in Buchanan, N.Y., according to the analysis by MSNBC.

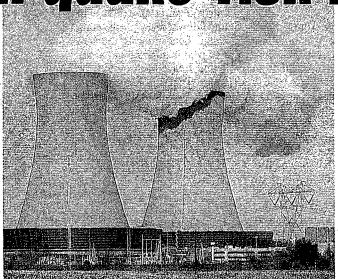
That analysis found the chance of an earthquake damaging the plant was raised in the study to 1 in 18,868.

The previous risk rating was 1 in 45.455.

For comparison purposes, as outlined in an MSNBC article, the chance of winning the grand prize in the next Powerball lottery is 1 in 195,249,054.

The analysis also reveals that of the top 10 nuclear plants most at risk from earthquake damage, three are in Pennsylvania, more than any other state.

(See LIMERICK on A7)



This víew shows the Exelon Corp. Limerick Generating Station.

Mercury file photo by John Strickler

Nukeplantranked 3rd on MSNBC quake-risk list

(LIMERICK from A1)

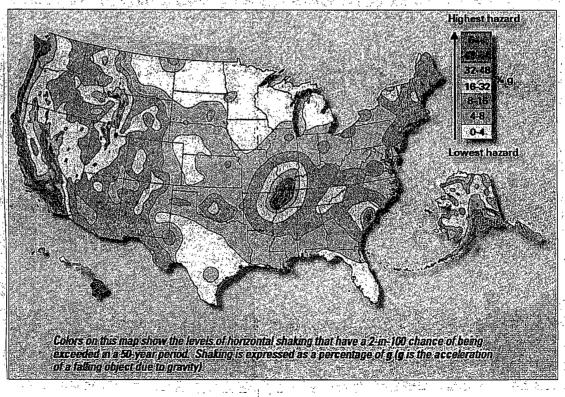
The other two are the Shippingport Atmonic Power Station in Beaver County and the Three Mile Island plant in Dauphin County.

As a next step, the NRC has now selected several plants from which it will seek additional data in order to get a better estimate of the possibility of catastrophic failure from an earthquake.

NRC spokesman Neil Sheehan confirmed on March 12 that the NRC has selected Limerick as one of the plants requiring further study.

Joe Szafran, a spokesman for the Limerick facility, said Exelon is aware of the analysis and is cooperating with NRC's latest inquiry.

He also noted that Exelon is confident in the Limerick plant's ability to withstand whatever earthquakes might strike a region not known for them.



"These plants are designed with historic data and seismic information and designed to withstand the largest considered likely and then an extra margin of safety is added" in the design and construction, Szafran said.

An NRC fact sheet notes that plants are designed to withstand "the area's maximum credible earthquake" and also requires plants "to assess their potential vulnerability to earthquake events, including those that might exceed the design basis."

"We're confident the plant can withstand any earthquake that might happen here," Szafran said.

One East Coast nuclear plant | better known for its proximity to a seismic fault is the Indian Point Nuclear Plant 14 miles north of New York City.

Indian Point sits in the number one spot of the MSNBC rankings for the U.S. plant at the highestrisk for earthquake damage.

Built along the Hudson River, it began operations in 1963 and was subsequently found to sit near the northern terminus of the "Ramapo Fault line system," a system of faults forming the boundary between two geological formations in the mid-Atlantic which runs from New York through New Jersey and into Pennsylvania.

The southern terminus for this 200 million-year-old fault, which has a northeast to southwest orientation, is near Schaefferstown in Lebanon County, Pa., according to information from Columbia University's Earth Institute.

The Ramapo fault line has several smaller fault systems associated with it, including the Chalfont, Flemington and Hopewell faults, but maps seem to show it traversing Pennsylvania several miles to the north of the immediate area near Limerick.

Although this fault is not known for major tremblors, several earthquakes have been recorded in its proximity, most of them in northern New Jersey.

The most recent were two small earthquakes recorded there in February 2009.

Sheehan said he does not know if the Ramapo fault was a factor in the NRC's decision to put Limerick on the list of plants that will be getting an updated seismic analysis.

The most powerful recorded earthquake in Pennsylvania was 5.2 in 1998 in the northwestern part of the state.

In 1984, a earthquake that registered 4.1 on the Richter scale occurred in Lancaster County. The epicenter of that quake was near the Peach Bottom nuclear plant in York County, according to the Lancaster Intelligencer-Journal.

Peach Bottom, which is also on the list of plants which will get a new

earthquake assessment from the NRC, that newspaper reported.

That plant placed 34th on the earthquake risk rankings compiled by MSNBC.

Although the latest NRC study has altered the risk statistics for the nation's plants, the agency does not conclude that this risk is mordinately high.

"Overall seismic risk estimates remain small," notes the NRC report, released Sept. 2, 2010. "There is no immediate safety concern."

However, several factors pushed the NRC to take a closer look at certain plants.

The primary cause is a better understanding of seismology resulting from better equipment, better measuring and better computer models.

So in 2008, the U.S. Geologic Survey updated its assessment of seismic threats.

Among the changes was "a broader range of earthquake magnitudes for the central and eastern U.S.," according to a USGS release on the update. Another important change was "several new and updated ground-shaking models for earthquakes in the central and eastern U.S. were implemented in the maps," USGS wrote.

In effect, nothing has changed but the government's understanding of how earthquakes work, what those changes mean to specific locations, and how that new understanding could affect what the agency previously considered the risk of earthquake damage to be

Consider for example that the risk rankings put together by MSNBC from the new NRC study do not put plants in California, Oregon or Washington near the top of the list.

That's because the earthquake risk was more pronounced in those locations and those plants were built with additional protections to account for that higher risk.

The earthquake risk at Limerick, by contrast, was considered low when its two reactors were commissioned, the first in 1985 and the second in 1989. As a result, it was not designed or built with the necessity of withstanding a major earthquake in mind.

And the NRC study may well find that the precautions in place are adequate. Or it may require some retrofitting at the plant, which Exelon will undertake if required, Szafran said.

"These things change as new information becomes available," said Szafran. "New data becomes available and agencies have to respond to that. We understand that. Who knows, maybe in another ten years, more data will be available and our numbers will be re-adjusted again."

Nevertheless, said Szafran, "Our top priority is the health and safety of the community and our employees."

MERCURY EDITORIAL 3-15-11

Limerick's shadow reminds us of risk should disaster hit

Explosions in earthquake-stricken Japanese nuclear reactors have sparked worldwide discussion of the effects on nuclear energy fears and the renaissance of new plant development worldwide.

In most places, the questions are theoretical. Here in the shadow of Exelon's Limerick Nuclear Generating Station, the questions are real: Could a similar disaster happen here?

The likelihood of a tsunami taking out the Limerick plant built hundreds of miles from the ocean in Montgomery County farmfields is pretty much nil. But an earthquake is not so far-fetched.

Ironically, the Nuclear Regulatory Commission recently put Limerick on a list of plants being studied to determine the extent of seismic risk, according to Neil Sheehan, NRC spokesman. Sheehan said the timing of the review, set before the catastrophe in Japan, is purely coincidental.

He noted that the agency's plans to examine this aspect of nuclear plant safety were undertaken long before Friday's earthquake and tsunami caused explosions in the reactors north of Tokyo.

Advances in seismic science have prompted the NRC to undertake a review of safeguards at some of the nation's nuclear power plants as they relate to seismic issues, Sheehan said.

Sheehan said nuclear power plants were built to withstand seismic activity, but their durability as determined when they were built some 40 years ago may have changed. Computer modeling is much more sophisticated now, and the NRC may learn more about potential risks than in years past.

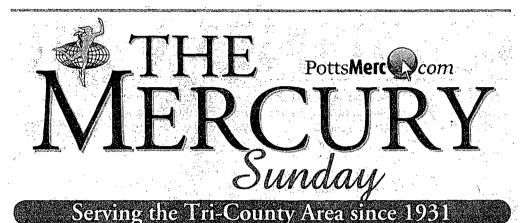
For the residents of this area, who live in the shadow of the Limerick towers and drive by the rising steam columns from the massive plant every day, the threat is never completely out of mind.

The siren test blasts at 2 p.m. the first Monday of every month are an eerie reminder that we live in the radiation zone of a massive nuclear plant. The Exelon plant has a strong safety record and a clean bill of health. But the disaster in Japan has shown that a force of nature can wreak disaster on the best engineered and most sturdily built structures.

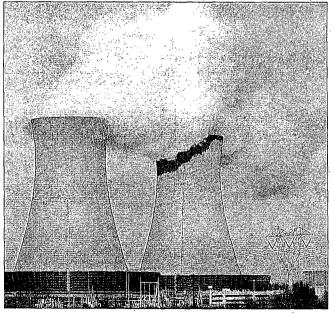
Catastrophic conditions in Japan are not cause for panic, but rather for concern and compassion to the thousands of people affected. The towers that rise above our region tie us to the particular fate that has befallen the radiation victims in Japan.

Nuclear Energy Institute spokesman Tom Kauffman told The Mercury Saturday that nuclear plants in the U.S. are designed to withstand "the maximum postulated earthquake that could occur where it sits." But he also said the plants in Japan were built to be earthquake-proof.

The disaster in Japan reminds us that there is no reassurance of safety against devastating forces. The towers we see every day remind us just how close we reside to the unknown.



Sunday, June 5, 2011 • Pottstown PA / \$1.75



Mercury file photo

A recent NRC inspection at Exelon Nuclear's Limerick Generating Station raised some new issues.

NRC inspection raises new issues at Limerick plant

Post-Japan checkup focuses on 'extraordinary events'

By Evan Brandt

ebrandt@pottsmerc.com

LIMERICK - Some parts of Exelon Nuclear's Limerick Generating Station might not be reliable to prevent damage from flood or fire if the plant was struck with an earthquake, a government inspection has found.

at issues arising from extraordinary events, similar to those that occurred at Japan's Fukushima Dai-ichi plant as the result of the March 11 earthquake and tsunami.

However, an NRC spokesman confirmed some of the elements called into question by the site inspectors "could adversely impact the plant's The inspections were meant to look fire and flood mitigation capabilities,"

even if the emergency were within the bounds of a disaster the plant was designed to withstand.

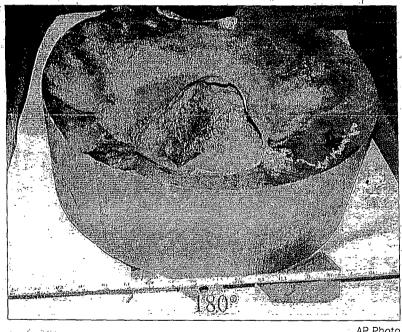
The NRC has taken an increased interest in how nuclear plants would handle extreme emergencies like those in Japan, now considered at least as bad as the Chernobyl accident

(See NUCLEAR PLANT on A4)



Monday, June 20, 2011 • Pottstown PA / 75¢

U.S. nuke regulators weaken safety rules



AP Photo

This photo made available by the Nuclear Regulatory Commission shows a 5-by-5-inch hole in a section cut from the top of the reactor vessel at the Davis-Besse nuclear plant in Ohio.

AP investigation: Standards being compromised to keep plants running

First of four parts.

By Jeff Donn AP National Writer

LACEY TOWNSHIP, N.J. — Federal regulators have been working closely with the nuclear power industry to keep the nation's aging reactors operating within safety standards by repeatedly weakening those standards, or simply failing to enforce them, an investigation by The Associated Press has found.

Time after time, officials at the U.S. Nuclear Regulatory Commission have decided that original regulations were too strict, arguing that safety margins could be eased without peril, according to records and interviews.

The result? Rising fears that these accommodations by the NRC are significantly undermining safety—and inching the reactors closer to an ac-

cident that could harm the public and jeopardize the future of nuclear power in the United States.

Examples abound. When valves leaked, more leakage was allowed—up to 20 times the original limit. When rampant cracking caused radioactive leaks from steam generator tubing, an easier test of the tubes was devised, so plants could meet standards.

Failed cables. Busted seals. Broken nozzles, clogged screens, cracked concrete, dented containers, corroded metals and rusty underground pipes—all of these and thousands of other problems linked to aging were uncovered in the AP's yearlong investigation. And all of them could escalate dangers in the event of an accident.

Yet despite the many problems linked to aging, not a single official body in government or industry has studied the overall frequency and potenti-

(See AGING NUKES on A3)

Limerick Nuclear Plant Alarming Accident Calculation

1980 Estimated Impacts Reported To Congress

74,000 Early Fatalities

610,000 Early Injuries

34,000 Cancer Deaths

Enormous Population Growth Since 1980

183% INCREASE 1980 to 2010 (2000 and 2010 Census Data)

Taxpayer Costs - For 1 Nuclear Accident Or Terrorist Attack
\$1 Trillion Estimated by NRC - Only First \$12 Billion Paid by Industry

From: David Kraft <neis@neis.org>

Thu, Jul 28, 2011 06:00 PM

Sender: no-new-nukes-yall@yahoogroups.com

Subject: Re: [N3Yall] NRC Fukushima task force today - call

in!

To: Rochelle <beckers@thegrid.net>

Cc: Diane Curran <dcurran@harmoncurran.com>, tomclements329@cs.com, no-new-nukes-

yall@yahoogroups.com

Here's a Q. I'd like answered, either here or somewhere else:

"Given that the head of the IAEA on June 20th said, 'We need to have a sense of urgency,' in dealing with the reviews of safety measures to prevent new nuclear disasters, and, 'Even the best safety standards are useless unless they are actually implemented,' what is the professional basis for and credentials of those at NRC and in Congress who believe that we should go slower or delay the urgent recommendations of the NRC investigative committee, compared to those of the IAEA and Yukiya Amano?" i.e. -- how does one reconcile this pregnant discrepancy in urgency? (See article below)
--Dave Kraft, NEIS--

Yukiya Amano, IAEA Head, on Nuclear Safety:

'We Need To Have A Sense Of Urgency'

GEORGE JAHN, Huffington Post, June 20 2011

http://www.huffingtonpost.com/2011/06/20/yukiya-amano-iaea-nuclear-safety_n_880479.html

VIENNA — The head of the International Atomic Energy Agency on Tuesday urged a worldwide review of safety measures to prevent new nuclear disasters,

TERRORISTS

Want To Attack A Nuclear Plant They Could Cause Cataclysmic Disaster

LIMERICK IS AN INVITING TARGET

Almost 8 Million People Live Within 50 Miles.

To Limit Our Risk Of Becoming Another Fukushima Limerick Must Be Closed Now, Not Relicensed to 2049

Evidence In This Report Shows NRC Policies On Terrorism Are Lax and Unprotective

Major Concerns

- 1. Exelon Refuses To Guard Limerick Nuclear Plant Against Terrorists' Planes or Missiles.
- 2. An Al-Qaida Suspect Worked At Limerick Between 2003 to 2007.
- 3. Satellite Images Allow Terrorists to See Far Too Much Detail, Giving Advantages to an Attacking Force.
- 4. Cyber Attacks Are A Real Threat For Meltdown.
 Obama Administration Just Declared Cyber Attacks An Act of War.

NRC and Exelon are using vast resources in a campaign of dangerous deceptive and illusion which seriously jeopardizes the future health, safety, and welfare of millions of people in this region.

- Those resources would be better spent in actually improving security and reducing risks.
- Terms 'robust' and 'well-guarded' used by Exelon and NRC for Limerick Nuclear Plant security are the height of hypocrisy.
- A handful of guards for 600 acres is not exactly 'well-guarded'. To ignore the need to have the capability to guard against air strikes and missile attacks when we know terrorists are capable of that can hardly be considered 'robust' security.
- If robust is used to refer to structure, NRC documentation shows Limerick Nuclear Plant is one with substandard containment. (Details included in this report.)

What is the danger?

- Limerick Nuclear Power Plant remains vulnerable to terrorist attacks that could result in the release of significant radiation far more deadly than any "dirty bomb".
- Released radiation is a health hazard because it can damage or destroy cells in the body. Damaged cells can induce cancers years later or pass damage on to future generations. Dead cells can trigger infections or incapacitate organ functions.
- Government studies report that radioactive material releases from either the reactor or onsite spent fuel can kill and injure
 unprecedented numbers of people within 500 miles and render large regions uninhabitable for long periods, according to the
 Union of Concerned Scientists.

Given The Potential Consequences, NRC's Back-End Thinking and Deception Are Inexcusable!

- Instead of prevention, NRC is choosing to rely on post-attack measures (let the attack happen) and deal with the devastating consequences later (evacuation, cancers, and uninhabitable properties).
- No one should harbor any illusion that NRC's policies will prevent tomorrow's attack, when they would not have prevented yesterday's attack.
- The Union of Concerned Scientists stated that NRC's policy is questionable at best and regulatory malfeasance, at worst. Each nuclear reactor is a potential Chernobyl. It's the height of hypocrisy to claim they are safe.

Given what is at stake, NRC should require Exelon to provide the most protective preventive action up front!

- NRC should assume that terrorists will someday use a plane or missile to attempt to attack a nuclear plant and require the owners to guard against them.
- The Union of Concerned Scientists state the primary concern is radioactive fuel within the reactor and spent fuel stored onsite after removal that must continuously be cooled to prevent disaster.
- In spite of unprecedented threats to millions of people from an air strike or missile attack on nuclear plants (a known terrorist capability), NRC won't make decisions to hold the nuclear industry accountable for their extraordinary threat to society.
- They won't make decisions that cost Exelon or the rest of the nuclear industry more money.

August, 2004, 45 Groups petitioned NRC to review the security vulnerability present in the design of 32 reactors nation-wide.

- In the 32 reactors, of which Limerick is one, the highly radioactive spent fuel is stored about 5 stories above ground and outside the reinforced containment dome that houses the reactor, making it especially vulnerable to aircraft penetration.
- NRC's oversight and implementation of adequate security measures for Limerick Nuclear Plant should include guarding against air strikes and missile attacks. Terrorists intend to strike nuclear plants and these are known terrorist capabilities.

No One Protects Us From A Plane or Missile Attack On Limerick Nuclear Plant.

- 1. Exelon Won't Pay To Guard Against a 9/11 Type Attack on Limerick
- 2. NRC Won't Make Them Pay

Taxpayers Can't Afford The Consequences Of Exelon Failing To Pay To Prevent An Avoidable Catastrophe (Potentially \$1 Trillion). Residents Can't Afford Devastating Health Consequences and Loss of Homes and Possessions.

Terrorist Attacks Are A Real Threat

Terrorists Said They Want To Attack A Nuclear Plant.

Terrorist attacks of 9/11/01 removed all credibility from NRC's position that terrorist attacks on nuclear facilities are 'speculative'. The 9/11 Commission investigations revealed terrorists' interest in attacking nuclear power plants.

Limerick Is A Prime Target Due To Density Of Population Almost 8 Million People Within 50 Miles

Health, Environmental, and Financial Consequences Could Be Catastrophic

Evidence Shows Limerick Nuclear Plant's Security Has Been Woefully Inadequate.

- "Nuclear Plant Guards Caught Sleeping On The Job" September, 2007
 At NRC's 2007 spring meeting on Limerick, ACE reported information provided by a Limerick whistle blower about guards at night sleeping and being otherwise distracted. Both Exelon and NRC denied it was possible. It took video tape of sleeping guards at another Exelon nuclear plant, being seen on national TV to get Exelon and NRC to take this threat seriously enough to fire the Security Company.
- "AI-Qaida Suspect Worked At Limerick Nuclear Plant" March, 2010 Associated Press
 This incident shows screening is ineffective during influxes of 1,500 to 2,000 workers changing radioactive fuel rods each year. This AI-Qaida suspect was able to get into the Limerick site for five years.
- Detailed aerial views of the Limerick Nuclear Plant site are still on the internet, showing terrorists exactly where to attack.
- Virtual How-to Manual for Attacking a Nuclear Plant with an Airplane Titled, "Evaluation of Air Craft
 Crash Hazards Analyses for Nuclear Power Plants" was still available for download from DOE's website
 in March, 2010. Reported in Patriot News 4/23/10
 - ✓ A 20 year old document was left on the internet until April 2010, showing the area that a plane could hit at a reactor with maximum effect, and cited targets that a plane could strike and cause radioactive releases.
 - This was discovered by a citizen researching sabotage and terrorism targeting nuclear plants. At the request of Three Mile Island's activist group, it was removed recently.
 - DOE says it was posted by mistake. Exelon, owner of TMI and Limerick, as usual downplayed the threat that such a document poses, with an uncredible industry post 9/11 study. Incredibly, Exelon's spokesperson admitted that a jet hitting a containment building would cause a fire but failed to mention that fires can cause meltdowns.
- At the 2010 Exelon PR event in Limerick, an Exelon employee at the security table laughed at our concerns.
 - ✓ Employees inaccurately claimed no risk from terrorists air strikes and missiles
 - ✓ We were told a terrorist ground force could not get through. Yet, June 2010, 60 Minutes featured a story that validated our concern. A similarly guarded facility in South Africa was infiltrated all the way into the control room. The fence was carefully cut and the alarm system and guards were disabled.
- MAJOR CONCERN:

We are still not protected against a 9/11 type attack on Limerick Nuclear Plant

- ✓ Limerick is still not required to guard against an air strike or missile attack by terrorists.
- ✓ NRC values Exelon profits over public protection.
- ✓ Limerick was protected a short time after 9/11, while government was paying the national guard.

Limerick Nuclear Power Plant Is STILL VULNERABLE AND NOT PROTECTED

Against Plane Or Missile Attacks By Terrorists!

NOT Guarded Against A 9/11 Type Terrorist Attack-

- Knowing Limerick's fuel pools are vulnerable to unstoppable radioactive fires and meltdown from an aircraft attack, even
 after 9/11, NRC failed to require Exelon to spend the money to guard Limerick against a 9/11 type terrorist attack by plane
 or missile.
- Limerick Airport is about one mile away, but NRC failed to have it closed even after 9/11. NRC foolishly told ACE not to
 worry because Exelon owned the airport, even though Exelon still allowed flying lessons, a huge aircraft event every
 September, and frequent helicopter traffic.
- Soon after that a drunken pilot used the airport and we learned there was no effective means to shoot him down if that became necessary. Exelon no longer owns the airport, and to the best of our knowledge, pilot lessons are still given there.

Drunken Pilot Who Buzzed Limerick Nuclear Power Plant Sentenced

Posted on: Wednesday, 1 December 2004, 18:00 CST Source: Associated Press/AP

NORRISTOWN, Pa. - A drunken pilot who buzzed his plane near a nuclear power plant and came near six commercial airliners was sentenced to six to 23 months in prison on Tuesday.

John V. Salamone had a blood alcohol level of 0.15 percent when he landed the plane after an erratic, four-hour flight on January 15, 2004 over the Philadelphia region, authorities said. The legal limit for pilots, set by the Federal Aviation Administration, is 0.04 percent, half the amount for drivers in Pennsylvania. Salamone, 44, who faced up to nine years in prison, must also serve five years probation and undergo alcohol counseling, a Montgomery County judge ordered.

- Salamone was <u>convicted of risking a catastrophe and reckless endangerment</u> after prosecutors learned the initial state charge of driving under the influence does not apply to pilots. Lawmakers have since tried to rectify the legal loophole, passing a bill - now awaiting the governor's signature - that makes flying drunk a crime.
- Salamone, flying a single-engine Piper Cherokee, meandered into New Jersey and flew into forbidden airspace. <u>He flew as low as 100 feet and within a quarter mile of the Limerick nuclear power plant, officials said.</u>
- A Philadelphia police helicopter helped force the plane down. <u>Officials acknowledged at the time there was little they could do, physically, to bring the plane down</u> after the North American Aerospace Defense Command concluded it was not a terrorist threat.
- > This incident shows it is possible for a plane to crash into the vulnerable fuel pools, using jet fuel to cause an unstoppable radioactive fire with an eventual meltdown, with no way to stop the plane.

"Nuke Plants Not Responsible For Airliner Attacks" 1/31/07 Mercury Article by Evan Brandt

- Exelon will not be required to protect our region against a plane or missile attack at Limerick Nuclear Power Plant, regardless of devastation that could be similar or possibly worse than that mentioned above after Chernobyl.
- Rather than requiring preventive measures, NRC is relying on post-crash measures and evacuation plans.
- NRC is not requiring the nuclear industry to provide the protection against 9/11 style terrorists attacks with airplanes or rocket-propelled grenades. NRC instead is protecting the financial interests of the nuclear industry.
- NRC's new plan assumes that a terrorist attack force would be relatively small and its weapons limited. Instead of sizing the
 design basis threat on an actual air or missile strike, NRC bases security standards on what the nuclear industry believes a
 private guard force can be expected to handle. NRC has allowed the nuclear industry to avoid the protection that is clearly
 needed in today's world.
- The nuclear industry argued that protecting nuclear plants against planes, missiles, or a large ground attack force should be the responsibility of the government.
- Senator Barbara Boxer, with jurisdiction over NRC wrote a letter that was ignored, stating "NRC's defense requirement should ensure that ... the plants are prepared to defend against large attacking forces and commercial aircraft."

Health and Economic Impacts Of A Terrorist Attack On Spent Fuel Pools Like Limerick's

Limerick Nuclear Plant is a ticking time bomb. Especially vulnerable to aircraft penetration, Limerick's fuel pools can be turned into weapons of mass destruction. Still, Exelon has not been required to spend the money to guard Limerick against terrorist missiles or air strikes.

Large volumes (over 6,000 assemblies-1,000 tons), of Limerick's highly radioactive wastes (spent fuel rods) — are stored in densely packed fuel pools, elevated five stories above and outside the reinforced containment structure for the reactor.

Limerick's design is similar to reactors in meltdowns at Fukushima. Roof-top fuel pools are highly vulnerable to loss of power and cooling water from an earthquake or other natural disasters, in addition to a variety of attacks by terrorists. With loss of cooling water, Limerick's fuel rods can heat up, self-ignite, and burn in an unstoppable fire, causing tens of thousands of deaths up to 500 miles away, according to a 2000 NRC study.

A meltdown in a spent fuel pool could cause fatal radiation-induced cancer in thousands of people as far as 500 miles from the site.

A 2004 Study by Dr. Edwin Lyman, Senior Scientist at the Union of Concerned Scientists, Concluded:

- As many as 44,000 near-term deaths from acute radiation poisoning.
- 518,000 long term deaths from cancer.
- Deaths could occur among people living as far as 60 miles downwind.

A 2003 study by Dr. Frank Von Hippel, Director of Science and Global Security at Princeton University, concluded that:

- A successful terrorist attack on a spent fuel storage pool could have consequences "significantly worse than Chernobyl."
- A catastrophic spent fuel fire could release a radiation plume that could contaminate 8 to 70 times more land than Chernobyl. (Would include the entire Philadelphia Metropolitan Region).

A January 2003 study by Dr. Gordon Thompson, Director of the Institute for Resource and Security Studies (entitled "Robust Storage of Spent Nuclear Fuel: A Neglected Issue of Homeland Security") reviewed ways spent fuel pools are vulnerable to attack.

 A nuclear fire in 1 spent fuel would "render about 95,000 square kilometers of land uninhabitable," (would cover about 75% of New York State, and into, segments of NJ and CT.)

Dry cask storage and transport are also very dangerous. It's time to close Limerick and stop producing such deadly waste for which there is no safe solution.

Al-Qaida Suspect Worked at Limerick Nuclear Plant

Saturday, March 13, 2010

By Geoff Mulvihill, Associated Press Writer

LIMERICK — Before he was rounded up in a sweep of suspected al-Qaida terrorists in Yemen, Sharif Mobley was a laborer at five nuclear plant complexes in Maryland, New Jersey and Pennsylvania. One of them was Exelon Nuclear's Limerick Generating Station officials have confirmed

Joseph Szafran, a spokesman for the Limerick plant, confirmed that Mobley worked there as a laborer, "doing basic maintenance work, erecting scaffolding, things like that." Szafran said he did not know the name of the contractor for which Mobley worked, but said it was not Wackenhut, the private contractor that, until two years ago, provided security services at Limerick and several other Exelon-owned plants.

Mobley worked at Limerick between 2003 and 2007, "and nothing since 2007," Szafran said. Although he would not confirm whether the plant had been visited by FBI investigators, Szafran did say "we are cooperating with the FBI and (Nuclear Regulatory Commission) investigations."

Authorities are investigating whether Mobley might have had any access to sensitive information that would have been useful to terrorists. Nuclear Regulatory Commission spokesman Neil Sheehan said Friday that investigations are under way into which areas Mobley entered. But he noted that areas containing nuclear fuel are tightly controlled, and that a laborer typically would not have access to security information or other sensitive matters. The plants are also checking areas where Mobley worked to ensure everything is in order, said NRC spokeswoman Diane Screnci.

Edwin Lyman, a senior staff scientist with the Union of Concerned Scientists, a watchdog of the nuclear power industry, said the case raises questions about security at the nation's nuclear power plants — even though Mobley has not been linked to any wrongdoing at any of them. Some of the information used to give temporary workers like Mobley clearance comes from other nuclear power companies and is sometimes incomplete, Lyman said. "The real question is: Was there information that the NRC or utilities could have seen that would have led to his disqualification?" Lyman asked.

Meanwhile, a law enforcement official said Friday that the U.S. government was aware of Mobley's potential extremist ties before Yemeni officials arrested him, but did not provide a time frame or details about what exactly was known about him. The official spoke on condition of anonymity to discuss an ongoing investigation.

The Nuclear Regulatory Commission said Friday that Mobley worked between 2002 and 2008 for contractors who did work at the Salem and Hope Creek plants in New Jersey; the Peach Bottom, Limerick and Three Mile Island facilities in Pennsylvania; and Calvert Cliffs in Maryland. Officials at PSEG Nuclear, which runs the complex in New Jersey, say he carried supplies and worked on routine maintenance mostly during periodic refueling outages, when hundreds of contracted employees descend upon the plants. The NRC says a laborer typically would not have access to security-related or sensitive information. Officials also say he passed screenings before he could work at the plants. The NRC says the screenings include criminal history checks, drug testing, psychological assessments and identity verification. The background checks are to be performed by either the nuclear plant operators or their contracting companies.

The plants also run behavior observation programs in which employees are taught to recognize and report suspicious activities.

Steve Kerekes, a spokesman for the industry trade group the Nuclear Energy Institute, said the industry has to share information about problem workers.

"To the best of our knowledge, with the regard to this individual, there was nothing to suggest any kind of problem with him," Kerekes said.
"Had there been, under the system that we have, we have a personnel database that's in place that lets all our companies across the industry know instantaneously if someone is for some reason denied access or flagged for some other kind of reason related to their behavior."

Kerekes also said that before regulations changed in early 2003, workers could gain temporary access to plants before their screening was complete. It's not clear whether Mobley had access before he was completely cleared.

Mike Drewniak, a spokesman for New Jersey Gov. Chris Christie, said Mobley was never reported to be acting improperly and was not believed to have been involved in any breaches at the New Jersey plants.

Mobley is a 26-year-old natural-born U.S. citizen who grew up in Buena, New Jersey, and later lived in Philadelphia and Newark, Delaware. A former neighbor said he moved to Yemen about two years ago, supposedly to learn Arabic and study Islam.

He was among 11 al-Qaida suspects detained this month in a security sweep in Yemen's capital of San'a this month. He was taken to the hospital over the weekend after he complained of feeling ill. Yemeni officials said he snatched a gun from a security guard and fatally shot one guard and wounded another before being captured. A former friend said he believed Mobley was becoming radical before he moved to Yemen about two years ago. Roman Castro, an Army veteran who did a tour in Iraq after he and Mobley graduated from high school together in 2002, said Mobley had only these words for him in a chance meeting four years ago: "Get the hell away from me, you Muslim killer!"

Mercury staff writer Evan Brandt contributed to this report. URL: http://www.pottsmerc.com/articles/2010/03/13/news/srv0000007808333.prt

An Al-Quaida terrorist suspect working at Limerick undetected for 5 years is cause for concern. This incident verifies that screening for terrorists is lax.

> <u>Both NRC and Exelon FAILED To Uncover An Al-Qaida Suspect Working At Limerick During Refueling For 5 Years (2003 to 2007).</u>

Other reason for serious concerns.

Until April, 2010 a report was on the U.S. government Web-site that could help terrorists plan an airplane attack on a nuclear plant. That report was only removed recently because of repeated concerns and criticism expressed by a TMI security consultant. Ironically, it is still on microfiche at some public libraries. The report was titled,

"Evaluation of Air Crash Hazards Analyses for Nuclear Power Plants."

- ✓ NRC downplayed the threat in an associated press article 4-25-10
- ✓ NRC said agency (NRC) studies indicate "a low likelihood" that a crash would affect public health and safety because of "the inherent robustness" of plant structures.
 - > Other studies and common sense suggest plant structures are not robust and that public health and safety would be greatly impacted, including at Limerick.
- Exelon's spokesperson cited an Electric Power Research Institute conclusion that a large jet hitting a containment building would cause a fire but no structural breach and would not result in a large radiation release to the public.
 - > Fires and explosions of an aircraft could breach the structure according to some experts and lead to a meltdown.

<u>Limerick Airport is a public airport only about a mile from Limerick Nuclear Power Plant</u> - It presents unnecessary risks which we were told by Exelon and NRC were mitigated by Exelon owning the airport. Even if that were true, we should all be concerned because Exelon has since sold the airport. Limerick Airport presents unique vulnerabilities to attack by planes or missiles.

- ACE asked NRC to close Limerick Airport after 9/11. NRC deceptively and inaccurately claimed the public had no cause to
 worry because of increased security and Exelon owned the airport, therefore carefully controlling air traffic in and out of
 the airport. NEITHER IS TRUE! In fact, Exelon is currently trying to sell Limerick Airport.
- The recent drunken pilot incident at Limerick Airport shows authorities would be unable to stop an attack on Limerick Nuclear Plant. Even a small plane, loaded with fuel, exploded in a strategic location could cause a disaster, especially in high-level radioactive waste storage areas.
- If water boils and drains away, spent fuel assemblies will overheat and either melt or catch on fire. An accident near Limerick Nuclear Plant, such as the recent one with an inexperienced pilot, could create havoc through a crash, followed by an explosion and fire too close to deadly radioactive fuel in pools or casks.
- Pilot lessons are still available at Limerick Airport according to area residents.
- Limerick Airport is used for helicopters from which missiles could easily be fired.

There are two other airports close to Limerick

N47 - Pottstown Municipal Airport (5 nm W)

N10 - Perkiomen Valley Airport (6 nm E)

Limerick Nuclear Plant's Spent Fuel Vulnerability To Aircraft Is ALARMING!

- Limerick's spent fuel pool is not designed to withstand aircraft impacts and explosive forces. An aircraft or missile would
 not need to completely level the fuel building to cause harm. It would merely need to crack the concrete wall or floor of the
 spent fuel pool and drain the water out.
- Even small planes filled with fuel could cause fires or overheating in spent fuel storage areas.
- Weapons available on the black market and even some that can be legitimately purchased in the U.S. or explosives could
 cause casks holding high-level radioactive wastes stored above ground at Limerick to be penetrated resulting in the release
 of large amounts of radiation.
- Casks are line-of-sight visible from open access (i.e. unsecured) areas in some areas while other plants place casks inside
 unguarded chain-link fences.
- In fact, terrorists can locate all high-level radioactive waste storage areas at Limerick Nuclear Plant through the internet, and locate positions of the handful of guards.

Public relations campaigns of Exelon and NRC attempt to make us believe rigorous security procedures are in place at Limerick Nuclear Plant.

Nothing could be further from the truth when it comes to air strikes, missile attacks, and large attacking forces.

The Nuclear Regulatory Commission (NRC) is the federal agency responsible for protecting the public's interests related to nuclear power plants.

> NRC is instead choosing to protect Exelon's profits.

NRC inexplicably refuses to require Exelon to protect Limerick Nuclear Power Plant against an air strike or missile.

NRC's estimate of the devastating consequences of a plane crashing into a nuclear plant was once on their website, but then removed. Fully aware of the devastating consequences, NRC is failing to require protection against the ultimate 9/11 attack.

Even after a court ruling in California against NRC's position, NRC refused to include Limerick in precautionary actions.

"Court Ruling Could Affect Local Nuke Project" 6/11/06 Mercury Article by Evan Brandt

- The court ruling related to a terrorist attack on radioactive fuel stored above ground at a California nuclear power plant should have included the same threats at Limerick Nuclear Plant.
 - The Alliance For A Clean Environment raised the same concerns as "Mother's for Peace" in California, about storing this deadly waste above ground and protecting it from terrorists planes or missiles.
 - The appeals court concluded it was unreasonable for NRC to declare the "the possibility of a terrorist attack....is 'speculative'...at the same time government is spending time, effort and taxpayer money to combat the threat of terrorist attacks on nuclear power plants.

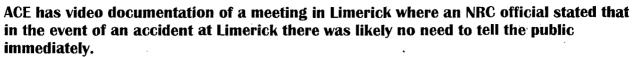
Even though NRC decided new nuclear plants should be designed to withstand a 9/11 type airplane attack, NRC is still refusing to require the same protection for Lierick.

"Agency Considers A-Plants' Vulnerability" - Published 11/9/06

- Planes are not on the list of weapons that reactors must be prepared to survive.
- NRC decided that new nuclear power plants should be designed to withstand a 9/11 style airplane attack.
- NRC refuses to include that requirement for older nuclear plants like Limerick Nuclear Power Plant, choosing to leave our region vulnerable to plane attacks.
- NRC also refused to consider the risk of terrorism in Environmental Impact Statements.

NRC repeatedly jeopardizes the public using dangerous deception to protect the interests of the nuclear industry. Examples:

- NRC used a deceptive study from the lobbying arm of the nuclear industry to convince the public that it has nothing to fear, even if a nuclear plant were attacked by a plane fully loaded with fuel. NRC's illogical claim has allowed the nuclear industry to avoid the cost of protecting against air strikes by terrorists.
- At a meeting in Limerick July 13, 2006, ACE made a video of NRC illogically claiming that no radiation would be released
 off-site if the high-level radioactive wastes at Limerick were attacked with planes or missiles. This is obviously an
 unsubstantiated baseless and irresponsible conclusion.
- NRC denies scientifically based conclusions from the National Academy of Sciences showing there is NO SAFE LEVEL of
 radiation exposure. Instead of working to minimize radiation threats from Limerick Nuclear Plant, NRC repeatedly and
 irresponsibly attempts to minimize public concern.
- When as many as 100 radioactive poisons could be released from Limerick Nuclear Plant in an attack, NRC irresponsibly
 and inaccurately claims radiation levels released from Limerick Nuclear Plant if attacked would not be a threat to public
 health. NRC totally ignores synergistic, additive, and cumulative harmful health impacts.
- NRC continues to ignore the conclusions from the BEIR VII report, the consequences from the Three Mile Island accident and Chernobyl, and common sense.
- Ironically, NRC still inexplicably denies the obvious association between documented elevated illness patterns around TMI after the disaster with the radiation released from that disaster.



- NRC admitted NRC could wait hours or even days to alert the public to evacuate.
 The order to evacuate after the TMI accident came 3 days after the accident, unnecessarily exposing thousands of uninformed people to those radiation releases.
- NRC needs to value public health more than the interests of the nuclear industry. It doesn't serve the public's interests to
 wait to be informed of radiation releases.
- > NRC should inform the public immediately of any accidental radiation release from Limerick, and let each family decide what protective actions they need to take.

NRC disputed army test results when claiming high-level radioactive waste containers can't be penetrated with missiles.

• Army tests prove otherwise.

NRC claimed 3 different time requirements related to high-level radioactive waste removal from Limerick's fuel pools (in writing to ACE).

- If the radioactive spent fuel rods are not adequately cooled after removal there is risk of a disaster caused by fire. NRC first said rods must remain in pools 5 years to be adequately cooled, then 1 year, then 3 years.
- We suspect NRC is abandoning precaution, because Limerick's fuel pools are overloaded.

Without any evidence of safe removal of deadly high-level radioactive wastes from casks after 20 to 30 year storage, NRC continues to claim there will be no corrosion problems with removal of the steel holding Limerick's deadly wastes.

- NRC's own evidence of corrosion suggests otherwise.
- Yet, when learning of corrosion problems, NRC actually stopped the research.

Using results from NRC's own studies, several million people within 50 miles of Limerick Nuclear Plant could die from radiation released if a spent fuel assembly melts or catches on fire.

Yet, at meetings in Limerick, NRC irresponsibly and inaccurately claimed radiation would not be transported offsite in case
of a terrorist attack on spent fuel.

NRC studies estimated people living within 50 miles could die from the radiation released when spent fuel assemblies melt or catch on fire.

- Spent fuel pools contain more highly radioactive fuel than the reactor cores.
- This high-level radioactive waste is a softer target that could yield graver consequences than an aircraft crashing through the reactor containment structure.
- Spent fuel pools at all U.S. nuclear plants are located outside the reactor containment structure. If water boils or drains away, spent fuel assemblies will overheat and either melt or catch fire.
- Spent fuel is now also stored in above ground concrete casks on-site.

NRC's Failed Oversight Of Security Guards At Limerick Nuclear Plant Could Have Led To Disaster

- Failure to discover, report, or take action against guard misconduct, including sleeping guards and romantic episodes on duty reported to ACE and others in 2006.
- Failure to take action against Exelon's security company, Wackenhut, until finally forced into it at another nuclear plant by video of a sleeping guard. Previously, NRC ignored the report titled, "Homeland Insecurity: How the Wackenhut Corporation is Compromising America's Nuclear Security".
- NRC permitted Wackenhut, in a clear conflict of interest, to be in charge of testing itself and its competitors in simulated
 "force-on-force" terrorists attacks.
- The point is Due to NRC's negligence there could have been a disaster. The security firm with sleeping and inattentive guards, Wackenhut, was finally fired but not because of NRC's oversight, but instead because a whistle blower took video and caused a media blitz.

Only a handful of guards cover 600 acres at the Limerick Nuclear Plant site.

- The property is bordered over a long distance by the Schuylkill River.
- Train tracks also run through Limerick Nuclear Power Plant property.
- It's possible only a handful of Limerick guards are trained to prevent only a five person terrorist attack.
- ACE asked how many guards work at Limerick Nuclear Plant on each shift, based on reports to us that guards were falling
 asleep because they were overworked and forced to take long shifts. NRC refused to answer.
- Unfortunately, NRC's information blackout policy since 2004 gives NRC a new level of secrecy that enables NRC to simply hide security problems with no accountability. This troubling policy could actually make us less safe.

NRC already has the authority to demand precaution and prevention.

- NRC's hands are not tied by a lack of funds or a lack of authority.
- NRC lacks the will to require the nuclear industry to be responsible.
- NRC is clearly more interested in protecting the nuclear industry's bottom line on security costs than requiring nuclear plant
 operators to meet the real cost of defending nuclear power plants from terrorism using air craft or missiles.

NRC Ignores Safeguards For Prevention!

- NRC refuses to consider adding structural features to reactor sites to prevent a successful air attack.
- NRC rejected calls by the public and policy-makers to consider the feasibility of directly protecting nuclear plants from air attack by imposing no-fly zones or deploying portable anti-aircraft systems.
- NRC fails to weigh the potential catastrophic consequences of a meltdown and large radiological release, especially in a heavily populated region such as ours, in NRC's requirements of the nuclear industry for preventive safeguards.
- Instead, NRC uses excuses for the nuclear industry to avoid responsibility and costs, simply referring to nuclear industry biased studies that evaluate consequences of air attacks.

Virtual Reconnaissance and the Security Threats from Nuclear Power Plants By Paul Gunter

- Imagine some would-be enemy of the state sitting in a Wi-Fi café now found practically anywhere on the globe connecting his or her laptop computer to the internet for the virtual reconnaissance of a nuclear power plant in the United States. Today, such an enemy, perhaps sitting thousands of miles away, can determine where all the reactor's guard towers are. Maybe they also want to locate the high ground nearest to the reactor or where the plant shift changes occur. It is no problem to determine the location of nearby highways and staging areas that could be involved in an evolving attack plan. They can virtually view a variety of pathways, survey on-site stairwells and ladders, map out an attack plan on reactor systems and lay it out in a table top exercise for a would-be adversary team to practice on. These aren't stolen and smuggled photographs. They are all available off the Web, free for the taking.
- Such information and more is available today on high-resolution mapping Web sites like http://maps.live.com and http://www.virtualbirdseye.com that publicly provide free updated state-of-the-art satellite photography, according to Scott Portzline, a security analyst with Three Mile Island Alert in Harrisburg, Pennsylvania. He has been grimacing over the threat that comes from the wide public availability of potentially national security-related details. Take for example the level of on-site security detail revealed in a "bird's eye view" of the on-site nuclear waste storage casks stored near Route 9 at the oldest nuclear power plant in the U.S., Oyster Creek nuclear power station in Lacey Township, New Jersey, less than 60 miles from New York City. Portzline writes in his May 13, 2009 letter to the United States Department of Homeland Security: "There now exists a very serious compromise of security at our nation's nuclear power plants. Due to the very high quality of satellite images, terrorists and saboteurs can see far too much detail, which gives specific advantages to an attacking force. Some of the defensive positions of nuclear plant guards are now revealed due to the elevated level of clarity and resolution. Furthermore, these images reveal pathways, stairways and potential staging areas giving terrorists the ability to plan the quickest or best route to the specific targeted buildings".
- Nuclear power has always been an inherently dangerous technology. That danger has significantly increased with malicious events like
 the truck bombing of the Murrah Federal Building by domestic terrorist, Timothy McVeigh, and the devastating al Qaeda hijacked aircraft
 attacks of September 11, 2001. If someone, by design or by insanity, wants to do maximum damage to public health, the environment
 and to economically dislocate potentially large geographic areas for a long time, nuclear power plants become the targets of choice.
- By necessity and by its very nature, nuclear power is becoming a more secretive operation, incompatible with an open democratic
 society. The public is already denied its due process to openly challenge nuclear power plant operating licensing proceedings that involve
 issues over inadequate site security and vulnerable on-site nuclear waste storage. The continued operation, timeless presence and
 potential expansion of nuclear power poses an increasing threat not only to public health and safety and to national security but to the civil
 liberties of an open society.
- The level of detail now widely available in an exponentially growing information age spotlights the concerns that Mr. Portzline has raised to federal officials. Federal action to blur the detail of virtual images of existing nuclear power plant sites is needed. However, such action in and of itself does not address the growing threat that this particular energy technology will continue to pose now and into the distant future. It does make potentially malicious reconnaissance much less easy to perform by remote and anonymous adversaries. Such suppressive action does, however, highlight and amplify a concern for our civil liberties and forces the question what other information

- forums must be obscured or denied the public and what other freedoms must be lost to protect us from the threat posed by nuclear power?
- Let's be clear it is not that we need to fear or curtail the operation of legitimate internet businesses or ban high resolution satellite photography from Web sites. These are amazingly informative and educational sites in the new realm of virtual reality. Just take a look at another "bird's eye view" from the Web site Virtual Bird's Eye for an impressive virtual tour of the Horse Hollow Win Turbines in Taylor County, Texas, one of the world's largest wind turbine farms here in the United States. Taking the tour does not, of course, expose any guard towers or security threats. That's because there aren't any.

Cyber Attacks And Limerick Nuclear Power Plant

- A cyber attack on Limerick could disrupt power for an extended period, eventually leading to meltdown. If hackers can get
 into the Pentagon and other well guarded facilities, terrorists could get into Limerick's systems
- Terrorists can attack Limerick Nuclear Plant through cyber attacks on computers and electronic controls inherent to the
 operation of Limerick's two reactors. One consequence could be loss of cooling water followed by a meltdown.
- The Obama Administration is sufficiently concerned about cyber attacks to have recently declared them an act of war.
- "Cyber-security" is yet another example of why we can't trust NRC to be diligent or effective in protecting public interests from the devastation of a terrorist attack on Limerick.
- NRC first recognized the need to enhance "cyber-security" at nuclear plants in 2001, after the 9/11 terrorists attack.
- Yet from 2001 until 2009, NRC failed to take any action to require improved "cyber-security plans" at nuclear plants.
- Eight years after 9/11, NRC finally issued guidance on how nuclear plants could go about assessing risk to their "cyber security". In 2009 NRC charged each plant with 3 "goals" instead of requiring immediate action to insure stringent "cyber-security" standards.
- 10 years after the 9/11/01 terrorists' attacks, Exelon finally completed a "cyber-security program" for Limerick Nuclear Plant (Reported in Mercury 8/10/11).
- The usual worrisome language was used to describe Exelon's Cyber Security Program.
- Limerick's "Cyber Security Program provides <u>high assurance</u> that digital computer and communication systems and networks ...are <u>adequately protected</u> against cyber attacks, ...up to threats considered likely."
- When hackers can penetrate Pentagon systems, NRC should have required more than adequate protection for even
 unlikely events, regardless of costs to Exelon, a multi-billion dollar corporation.
- Exelon's "assurance" of "adequate Cyber-Security" protection for "threats they consider likely" is hardly reassuring.

UNACCEPTABLE RISKS AT LIMERICK NUCLEAR PLANT

Limerick Nuclear Plant would be a prime target. Prevention is imperative!

- The region around Limerick Nuclear Plant is one of the most heavily populated (Almost 8 Million People in 50 Miles).
- Philadelphia is located just 21 miles away.
- Limerick Units 1 and 2 are both GE Mark II designs, where the spent fuel pools are located over 60 feet above ground and outside the reinforced containment dome that houses the reactor.
- NRC admitted on the record October, 2000 that "...Mark I and Mark II secondary containments generally do NOT appear to have any significant structures that might reduce the likelihood of aircraft penetration".
- An aircraft crash would likely lead to a breach of the fuel pool and the loss of cooling water from the pool, potentially
 causing the zirconium cladding on the fuel rod assemblies to ignite, releasing up to 100% of the radiation contained in the
 pools.
- Consequences of such a large release of radiation from a fuel pool fire would be devastating and deadly to the surrounding community and hundreds of miles away.
- Such a danger persists for as long as the fuel remains in the pool, whether the reactor is operational or not.
- A reactor with Limerick design features is no longer licensed for construction.
- There are no security requirements to ensure a level of security commensurate with the dangers posed by a possible large force, airplane or missile attack on Limerick Nuclear Power Plant.
- The validity of security compliance tests performed at Limerick Nuclear Plant are in doubt, since they are only based on a small force ground attack, with no evidence supporting that as the only kind of attack being planned for Limerick Nuclear Plant

For Limerick's Updated EIS - NRC should consider and report on all issues listed above, to include terrorism by aircraft, missiles, and cyber attacks, on spent fuel pools and casks.

10/16/04 - RPHP, Public Citizen, Nuclear Reality Campaign, and ACE rallied around Exelon-owned PECO headquarters in Philadelphia, all stating that ongoing security problems should be enough on their own to prohibit a 20-year extension to Limerick's license.

Groups described health risks from nuclear power and criticized the failure to deal effectively with the on-going waste problem.

- "Limerick is a prime example of security problems and risks that we shouldn't see in an industry like nuclear power three years after 9/11, yet we do. A reactor with the same design as Limerick would never be built today. The industry and the NRC's soft approach is unacceptable", said Brendan Hoffman, Public Citizen.
- "We have nowhere to store the waste from nuclear power currently, and Exelon is seeking ... to extend operating licenses (including Limerick), which will just create even more waste", said Geoff Ower, Nuclear Reality Campaign.
- Joseph Mangano, Radiation and Public Health Project, stated, "Routine nuclear operations, and not just a major accident or attack, can harm people."
- A study of radioactive strontium-90 in baby teeth near the Limerick Nuclear Plant found the highest levels of areas near seven plants studied.
- The Alliance For A Clean Environment (ACE) Urged Exelon To Address Limerick Nuclear Plant Security. Donna Cuthbert from ACE stated: "It's time we take action and force the industry (Exelon) and NRC to address health, safety, and security problems they have so far refused to recognize."
- In 1982, the CRAC 2 report to Congress, assessed consequences of an accident at Limerick. Consider what was calculated in 1982 to result from a Limerick accident.
 - 74,000 peak early fatalities
 - 610,000 peak early injuries
 - 34,000 cancer deaths
 - Over \$400 Billion in Costs
 - With the population up 24% in Montgomery County (2004), and as much as 64% in Chester County from the 1970 Census data used in the study, the results would be far more devastating today.
 - > Families in and around Pottstown and Philadelphia deserve to know just what kind of threat is sitting right in their backyard.

Since that time the population skyrocketed and even doubled. Estimated costs have also doubled. How could NRC or anyone speaking in the public interests defend failing to guard Limerick Nuclear Plant against a plane or missile strike?

Residents throughout the entire region around Limerick Nuclear Plant, including some in Philadelphia, have signed ACE'S PETITION OPPOSING the EXTENSION of the OPERATING LICENSE for Limerick Units 1 and 2. Security is a major factor.

- ✓ The Japan nuclear disaster revealed that spent fuel pools like Limerick are vulnerable to terrorists attacks and deadly.
- ✓ Exelon refuses to guard Limerick's fuel pools against terrorists planes or missiles.

2006 - The Union of Concerned Scientists Stated:

NRC must address the vulnerability of spent fuel storage at all U.S. nuclear power plants now. NRC regulations (10 CFR 73.55) require plant owners to provide adequate security to protect spent fuel – whether stored in pools or casks – from radiological sabotage.

The Population In The Region Of Limerick Nuclear Plant, Including Philadelphia, Should Support The Petition Filed August 10, 2004, pursuant to 10 C.F.R. 2.206, by the 45 member groups of the Nuclear Security Coalitions, and its request that NRC:

- ✓ ADDRESS STRUCTURAL VULNERABILITIES Issue a Demand for Information to the licenses for all Mark I and II BWRs (INCLUDING LIMERICK NUCLEAR PLANT) and conduct a 6-month study of options
- Present the findings of the study at a conference where all stakeholders can attend, and provide transcribed comments and questions
- ✓ Develop a comprehensive plan that accounts for stakeholder concerns and addresses structural vulnerabilities of all Mark I and II BWRs within a 12-month period
- ✓ Issue Orders to the licensee for Limerick and all Mark I and II BWRs compelling incorporation of a comprehensive set of protective measures, including structural protections
- ✓ Make future operation of Limerick and each Mark I and II BWR contingent on addressing their structural vulnerability with participation and oversight by a panel of local stakeholders

Limerick Nuclear Plant needs tighter regulation and security because of its proximity to Philadelphia. Limerick is one of the U.S. nuclear plants with extremely high population densities within 50 miles.

The U.S. Nuclear Regulatory Commission should re-examine its assumptions about safety at Limerick Nuclear Plant in such a densely populated area.

U.S. nuclear power plants that store thousands of metric tons of spent nuclear fuel pose risks of a crisis like the one in Japan.

U.S. nuclear plants had an estimated 63,000 metric tons (138.9 million pounds) of spent fuel stored on site as of January 2010, according to a report from the NRC. About 2,000 metric tons a year is expected to be added to that total, the NRC said.

Limerick Nuclear Plant should be closed.

You cannot move almost 8 million people in the amount of time required to protect them. There aren't that many roads.

<u>Until Limerick closes in 2029, Exelon can and should provide</u> <u>precautionary measures at Limerick Nuclear Power Plant, that go beyond</u> <u>unprotective NRC requirements.</u>

Exelon can and must prevent another Fukushima or Chernobyl in our region. If Exelon refuses to guard against air strikes or missiles, the license renewal should be rejected immediately.

Look what happened at Chernobyl: .

Cancer Impacts

- 475,000 fatal cancers, plus equal non-fatal cancers occurred over time, both inside and outside the Soviet Union, from various radionuclides released, according to a leading radiation researcher, John Gofman, M.D., Ph.D. in 1986.
- 10 years later, John Gofman predicted Chernobyl would kill or injure at least ONE MILLION people.
- There was a 30 to 60 fold spike in Thyroid Cancer in the affected area within 15 years, most probably attributable to the Chernobyl release according to the World Health Organization.
- Chernobyl children confirmed they are most vulnerable to radiation, even in relatively small doses. The
 American Academy of Sciences says children are extra sensitive to DNA-damaging effects of radiation, suffering
 higher rates of certain childhood cancers like leukemia and thyroid cancer.
- Epidemiologist, Rosalie Bertell, wrote a detailed rebuttal to IAEA's attempt to whitewash Chernobly's neverending legacy of cancer and debilitating disease. For excerpts contact www. radiation.org or call ACE (610) 326-2387

Financial / Environmental Impacts

- Hundreds of Billions of Dollars in Damage
- Millions of Acres Contaminated
- Millions Still Live on Contaminated Land
- Thousands Were Permanently Evacuated From Their Homes
- Sheep Were Quarantined or Slaughtered as far away as Scotland
- Milk Supplies Were Interdicted on the U.S. West Coast
- Rhode Island soil had Cesium-137 fallout from Chernobyl (Woods Hole Oceanographic Institute)
- Terrible On-going Misery Continues in Ukraine, Belarus, Russia, and elsewhere across the world

NRC SHOULD START TELLING THE TRUTH ABOUT CHERNOBYL

MINIMIZING RISKS INTENTIONALLY DESTROYS NRC'S CREDIBILITY WITH THE PUBLIC.

PLEASE REVIEW RUSSIAN SCIENTISTS REPORT ON 5,000 STUDIES

This scientific book shows that by 2004 Chernobyl Caused 985,000 Additional Deaths Worldwide

The Truth About Consequences To People and The Environment New York Academy of Science nyas.org/annals

PLEASE REVIEW INFORMATION BASED ON DOCUMENTS FROM YOUR OWN FILES:

Nearly 200 Near Misses At US Nuclear Plants Since 1986. The significance of this report in terms of plane or missile strikes on Limerick Nuclear Plant:

 The report shows that Limerick Nuclear Plant's containment is substandard - meaning if a plane or missile attack occurred, much more radioactivity would be released.

An American Chernobyl – A 2006 Greenpeace Report On NRC Documentation

Executive Summary - http://www.greenpeace.org/usa/assets/binaries/an-american-chernobyl-executive

In reality, a terrorist attack with a plane or missile on Limerick Nuclear Power Plant could be worse than some of the consequences listed above for Chernobyl. Limerick's fuel pools are packed and could release even more radiation.

> Yet, inexplicably, NRC refuses to require Exelon to be responsible to guard against a terrorist attack with planes and missiles at Limerick Nuclear Plant.

Chernobyl was avoidable

> A plane or missile attack on Limerick Nuclear Plant is still avoidable

NRC'S Oversight of the Nuclear Industry Has Been Beyond Lax, It Has Been Negligent

The Body Of Evidence On Terrorists Threats Is Both Undeniable and Overwhelming NRC Should Not Leave Us Vulnerable To A Terrorist Plane or Missile

A Limerick Nuclear Disaster Would Release The Same Kind Of Radiation As A Nuclear Bomb.

We Now See That An Air Attack On Limerick's Spent Fuel Pools Could Be Worse Than The Bombing At Hiroshima.

Exelon can and should provide precautionary measures at Limerick Nuclear Power Plant, that go beyond outdated, unprotective NRC requirements.

- 1. Guard against air strikes and missile attacks by terrorists.
- 2. Close the Limerick Airport, located only about one mile from the nuclear plant.
- 3. Provide 24 hour specific guarding of the railroad tracks that run through the 600 acre property.



06/22/2006

Court ruling could affect local nuke project

Evan Brandt, ebrandt@pottsmerc.com

LIMERICK -- A federal court decision regarding the possibility of a terrorist attack on radioactive fuel stored at a California nuclear power plant could have an impact on a similar proposal here.

When Exelon Nuclear announced plans to store spent nuclear fuel rods in casks on the grounds of its Limerick Nuclear Generating Station, the Alliance for a Clean Environment raised some concerns.

High on its list was the possibility of a terrorist attack.

Advertisement

Among its suggestions for dealing with those concerns was fortifying the casks in bunkers, or scattering the casks around the site so they would not present one single target.

Apparently they were not alone.

For when Pacific Gas and Electric Co. announced its plans to store spent nuclear fuel rods in casks on the grounds of its Diablo Canyon nuclear generating station, a similar California group raised the same concerns.

The difference is that the California Group, Mothers for Peace, went to federal court. And, joined by the California Attorney General, they won.

In a 3-0 decision earlier this month, the Ninth U.S. Circuit Court of Appeals in San Francisco set aside the permit granted Diablo Canyon by the Nuclear Regulatory Commission.

The court said the NRC's argument that the threat of a terrorist attack was too remote to include in environmental planning, was undermined by the Bush administration's post-Sept. 11 statements and actions about the terrorist threat against those self-same plants, the San Francisco Chronicle reported.

According to the Los Angeles Times, the appeals court concluded it was unreasonable for the NRC to declare that "the possibility of a terrorist attack ... is speculative .. at the same time the government is spending time, effort and taxpayer money to combat the threat of terrorist attacks on nuclear power plants.

"The terrorist attacks of Sept. 11, 2001 have removed any shred of credibility from the NRC's stance that terrorist attacks on nuclear facilities are 'speculative' events that cannot be predicted," Diane Curran, the Washington, D.C., attorney representing Mothers for Peace, said in her oral argument in October, according to the Los Angeles Times.

"The ruling could have 'a very important impact' on other licensing decisions around the country, Edwin Lyman, a physicist and senior staff scientist at the Union of Concerned Scientists in Washington told the paper.

But whether that will prove true in Limerick remains unknown.

Beth Rapczynski, a spokesperson for Exelon, said her company's lawyers are "aware of the case and have read through the ruling."

She said the company "works hard to ensure all our projects meet NRC regulations and if the NRC chooses to change its regulations regarding this issue, we will, of course, comply."

Whether the NRC will change its regulations is, currently, another unknown.

Diane Screnci, a spokesperson for the NRC's King of Prussia office, said Wednesday the agency is reviewing the decision and

has no comment at this time.

And should the NRC decide to alter its regulations as they apply to the Diablo Canyon site, it's possible that would still have no impact on the Limerick project.

That's because the NRC licenses spent nuclear fuel storage in two ways.

One license is specific to the site, as was the case in California.

The other method licenses the provider of casks. Called a "general license," this is the case in Limerick, which has hired Transnuclear Inc. to install its casks.

Even if the NRC decides not to appeal this most recent court decision, don't be surprised if it argues the decision does not apply to the Limerick storage site because of the difference between the types of permit, said Rochelle Becker.

One of the original "Mothers for Peace" and now with the California-based Alliance for Nuclear Responsibility, Becker said, "You should expect the NRC to try and wriggle out of anything they are supposed to do. That is their pattern."

In fact, Becker said she became so disgusted after dealing with the NRC that she changed her tactics and joined a group that argues the storage of nuclear fuel is a "states rights" issue and helped to craft a state law regulating radioactive waste now making its way through the California legislature.

Referring to the possibility of splitting the hair between a site-specific license and a general license, Becker said, "The most ridiculous thing about their argument is that a terrorist doesn't care about what kind of permit you have when choosing where to attack. The NRC has just refused to deal with this issue everywhere in the country and until they do, everyone's at risk."

And that's why, said ACE Vice President Donna Cuthbert, Exelon must be prevailed upon to install the most protective possible measures for the storage of its Limerick fuel.

"This is not just about Limerick and this is not just about our future," Cuthbert said.

"The decisions we're making today could have an impact on our grandchildren's grandchildren. Everyone who has these casks in their backyard should be asking the NRC these same questions," Cuthbert said.

She said she has already sent a letter to the NRC about her concerns and recently sent letters to the members of the Limerick Planning Commission and the Limerick Board of Supervisors, urging them to do the same.

Because its contractor has a general license, the only government permissions the power plant needs to begin construction on its storage project is local land development approval.

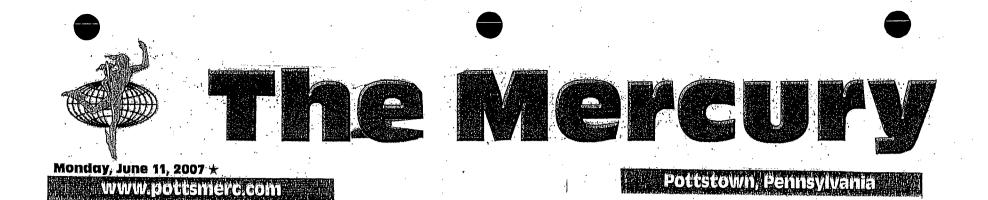
But that isn't going as smoothly as it might.

Last week, the Limerick planners had some questions of their own for Exelon officials, but they went unanswered. Citing security concerns, Exelon officials declined to provide information on their drawings for issues ranging from where current facilities are located to calculations for stormwater management.

So, according to Township Solicitor Joseph McGrory, the planning commission had little choice but to unanimously reject Exelon's application.

However, the planning commission is strictly a recommending body under Pennsylvania state law, and the final decision rests with the township supervisors.

According to the township Web site, the supervisors meeting is tonight at 7 p.m.



Terrorist risk for spent fuel not available for Limerick

By Evan Brandt ebrandt@pottsmerc.com

Residents living near a nuclear ower plant in California now have omething available to them that no ther neighbor of a U.S. nuclear plant as access to - a better idea of the risks iced if terrorists attack a spent-fuel orage facility.

A federal court decision spurred the Nuclear Regulatory Commission to assess the threat of a terrorist attack on a proposed storage facility for spent nuclear fuel tods at the Diablo Canyon nuclear plant, outside San Luis Obispo. about halfway between Los Angeles and San Francisco.

A similar storage project is under way at Exelon Nuclear's Limerick

Generating Station, but no such assessment of the terrorist threat can be facility proposed for the site in its enviexpected there any time soon. That's because the NRC interpreted the 2006 decision by the U.S. Court of Appeals 9th Circuit in a very narrow way.

That decision was issued after the San Luis Obispo Mothers for Peace sued the NRC for its failure to take into. account the effect a terrorist attack age projects now proliferating at

ronmental assessment.

After the U.S. Supreme Court declined to hear the NRC's appeal last vear, the 9th Circuit Appeals Court decision stood. But the NRC decidedthe decision applied only to the Diablo Canyon project, not to similar fuel stor-

would have on a spent fuel storage nuclear power plants across the cour

Although the physical aspects of th California project may seem similar o: their face to the project under cor struction in Limerick, there are admir istrative differences. The most signif cant is that the permit the NRC is cor sidering for the California spent fue

(SEE NUCLEAR FUEL on AB) . -

High-Level Radioactive Waste Storage Above Ground Gives Terrorists A Large Easy Target

A U.S. Court Forced NRC To Do A Risk Assessment At A California Nuclear Plant

BUT NRC REFUSED

To Do A Terrorist Assessment At Limerick Nuclear Plant Despite:

- **Railroad Through Site**
- **Schuylkill River Extensive Border**
- 2 Airports Too Close To Limerick Nuclear Plant About 1 to 5 Miles
- High-Level Radioactive Waste Housing Can Be Penetrated With Terrorist Missiles
- **Heavily Populated Region Around Limerick**

How Safe Are We?

There's NO PROTECTION Against A 9/11 Type Terrorist Attack

Plus:

September, 2007

Nuclear Plant Guards Caught Sleeping On The Job

March, 2010 By Geoff Mulvihill, Associated Press Writer

Screening Is Ineffective During Influxes Of 2,000 Workers Changing Radioactive Fuel Rods

Al-Qaida Suspect Worked At Limerick Nuclear Plant

What If These Were Terrorists?

January 15, 2004

Drunken Pilot Buzzed Limerick Nuclear Power Plant

- Within 1/4 mile from Limerick Nuclear Power Plant
- Flew into forbidden airspace as low as 100 feet Official acknowledged: "There was little they could do to bring the plane down."



About 1 Mile From Limerick Nuclear Power Plant - Nov. 4, 2007

The Mercury

A4 / Monday, August 7, 2006



OUR VIEW

Sleeping guards at nuclear plants raise serious questions

A "sleeping guard problem" has reared its ugly head.

On July 26, Exelon Nuclear, which owns and operates the Limerick Generating Station, announced a guard had been relieved of duty after she had been found to be "inattentive" the day before.

Exelon spokeswoman Beth Rapczynski confirmed the guard had been found sleeping and said later that the guard is no longer in the employ of Wackenhut, which conducted the investigation of the incident and

disciplined the guard.

Wackenhut is a Palm Beach Gardens, Fla.-based security company with a division that specializes in nuclear power plant security and provides security at 30 plants across the nation, including all of Exelon's nuclear plants.

According to stories in The Patriot-News of Harrisburg, a total of five incidents of employees sleeping, including a supervisor in the control room, were investigated at Three Mile Island during a two-year period. Wackenhut is the security provider at TMI, as well. In each case, as occurred at Limerick, the sleeping personnel were reported by other workers at the plant.

In January of this year, The Patriot-News reported that an Oct. 17, 2005, memo sent to security supervisors from Wackenhut's head of security at Three Mile Island complained that veteran guards at the plant were "informing new hires of all the locations that they can hide and catch a quick nap."

The newspaper also reported that sources had said the "inattentiveness could be linked to two factors —

long hours and boredom."

Seventy-eight workers at Three Mile Island filed a federal lawsuit against Wackenhut in January, alleging that for more than two years, the company had failed to pay them for overtime and other time owed them. By the end of February, the Nuclear Regulatory Commission had begun an investigation into the sleeping incidents at Three Mile Island, but in March, NRC officials refused to release the results, citing the need to protect security procedures.

A national watchdog group, the Project for Government Oversight, recently told the Nuclear Regulatory Commission that new work rules for nuclear plant security guards being considered by the NRC are worrisome. It warned that the NRC's consideration of using calculations of "group hours" as a way of monitoring how long guards work and allowing them to "self declare that they are too fatigued to work" could lead to problems.

The group said it had found examples of guards. who declare themselves too tired to work being fired, thus discouraging guards from pulling themselves

from duty when they are.

Also, allowing "group hours" could lead to nuclear plant operators being "able to fudge how many armed security officers they have on shift by sneaking the unarmed officers, trainers and, in some cases, clerical and managerial staff into the group with the armed responders.

The Project on Government Oversight also informed the NRC that its investigation at Beaver Valley Nuclear Plant in Pennsylvania indicated a "highpercentage" of security officers "worked between 60 and 72 hours per week."

At Limerick, Rapczynski said the discovery of the sleeping guard was "an isolated incident."

Troubling is the fact that the umbrella of security concerns keeps the results of the TMI investigation from being disclosed.

Of greater security concern must be the question of how many hours guards are being required to work. What is the training and what are the procedures for

guards to use to remain alert and capable of detecting and handling a threatened breach of security?

Since 2001, the public has been assured time and again that security measures have been heightened and that precautions against breaches of security are in place at the nation's nuclear plants. But because of security, the public is not privy to the details.

In the name of security, instead of in spite of it,

some answers are needed.

The Alliance For A Clean Environment P.O. Box 3063 Stowe, PA 19465 (610) 326-6433

October 4, 2007

Richard Barkley
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King of Prussia, Pa 19406
610-337-5065 rsb1@nrc.gov

Re: Limerick Nuclear Power Plant Sleeping Guards / NRC's Failed Oversight

Dear Mr. Barkley,

The Alliance For A Clean Environment (ACE) is extremely concerned about security at Limerick Nuclear Power Plant, which we have repeatedly reported to NRC. Limerick's property is over 440 acres, bordered over a large distance by the Schuylkill River, and has a railroad line through the site. This nuclear plant is within a mile of Limerick Airport, and 5 miles from Pottstown Airport.

After 9/11 the National Guard kept a watchful eye on Limerick. However, that practice was discontinued. We believe there are far too few security guards for such a large threat. Even worse, Wackenhut, the security firm employed by Exelon appears incompetent.

At the Nuclear Regulatory Commission (NRC) annual meeting in Limerick April 16, 2007, ACE again expressed our concerns about Limerick security and urged Exelon to replace Wackenhut. NRC irresponsibly claimed there was no need for concern, but asked ACE to identify our specific concerns about Wackenhut in a written statement to NRC, which we did. However, NRC failed to provide an adequate written response.

The question is - why wasn't NRC concerned? Given specific security issues that were raised by ACE at NRC's April 16, 2007 meeting in Limerick, NRC should have been concerned. Examples below should have been sufficient to take concern seriously.

- Exelon's security firm has proven to be unreliable for a host of reasons identified in a report titled, "Homeland Insecurity: How the Wackenhut Corporation is Compromising America's Nuclear Security." www.EyeonWackenhut.com.
- Congressional Quarterly reported March 11, 2006, that because of various security lapses, Wackenhut lost the contract to provide security services at the Department of Homeland Security's Washington, D.C. headquarters.

A Wackenhut security guard was caught sleeping on the job at Limerick Nuclear Power Plant (Mercury July, 2006). Exelon just fired Wackenhut at Peach Bottom for the same negligence, yet Exelon has no plans to change security at Limerick (Mercury 1/26/07). Security guards were sleeping on the job at both nuclear power plants. What is NRC going to do about this?

How can NRC justify an inspection at Peach Bottom, yet totally dismiss the same kind of incident at Limerick? In fact, ACE brought to NRC's attention April 16, 2007 the fact that workers reported anonymously to ACE that Limerick security guards were totally distracted on the job with intimate socializing. If concerned workers reported such egregious "inattentiveness to duty" to ACE, it is difficult to believe that NRC resident inspectors at Limerick were unaware of this conduct.

It's not a question of whether a disaster occurred as a result of multiple and repeated sleeping guard incidents at Limerick, Peach Bottom, and TMI. The real issue is that it could have. It would only take one terrorist attack to turn Limerick Nuclear Power Plant into a weapon of mass destruction, with devastating harmful health consequences to hundreds of thousands of people across our entire region and many hundreds of billions in financial consequences to the public. How can NRC continue to tolerate unreliable security at Limerick Nuclear Power Plant?

Please provide written responses to each issue raised above as well as the following questions.

- 1. How many Wackenhut security guards work at Limerick Nuclear Power Plant?
- 2. How many security guards work during each shift?
- 3. On average, how many hours of overtime do Wackenhut guards work at Limerick per day? Per week?
- 4. What is the highest number of overtime hours ever worked by a Wackenhut employee at Limerick per day? Per week?
- 5. Does NRC have a maximum permissible overtime limit for security guards at Limerick or elsewhere? If not, why not?
- Do NRC inspectors regularly check on activities of security guards at Limerick on all shifts? Are written records kept of those inspections? If not, how can the public be assured that NRC is inspecting security activities?
- 7. Does Exelon take bids on security contractors? Is Wackenhut the low bidder?

It appears NRC has been negligent in its security oversight regarding "inattentiveness to duty" by Wackenhut security guards at Limerick. ACE believes that must change. Just because incidents at Limerick were not caught on tape and provided to the media as they were at Peach Bottom, is no reason to ignore the sleeping guard incident at Limerick and pretend the other "inattentive" security incidents reported by workers at Limerick did not exist. Exelon fired Wackenhut at Peach Bottom for the same kind of security negligence going on at Limerick. Why would NRC permit such unprotective inconsistency?

Incompetence on the part of Wackenhut security guards at Limerick should not be compounded by indifference on the part of NRC in a matter of such importance. It is long past time for NRC to act responsibly. The public needs and deserves written responses from NRC to all issues, concerns, and questions identified in this letter.

Thank you for your immediate attention to this urgent matter.

Donna Cuthbert

ACE Vice President

CC:

Senator Specter Senator Casey Congressman Gerlach Congressman Dent Congressman Sestak PA Senator Rafferty PA Senator Dinniman Representative Quigley Representative Hennessey Montgomery County Commissioners Chester County Commissioners Pottstown Borough Council and Mayor Limerick Supervisors East Coventry Supervisors North Coventry Supervisors Lower Pottsgrove Commissioners Upper Pottsgrove Commissioners Douglass Township New Hanover Township Pottstown Mercury

Philadelphia Inquirer

The Pottstown Mercury (pottsmerc.com)

Saturday, March 13, 2010

By Geoff Mulvihill, Associated Press Writer

Al-Qaida Suspect Worked At Limerick Nuclear Plant

This Proves Current Screening
Is Ineffective During Influx Of Large
Numbers Of Workers Changing
High-Level Radioactive Fuel Rods.

The Mercury

A6 / Sunday, August 13, 2006 1x1



READERS' VIEWS

Who's keeping the public safe?

It appears the Limerick supervisors were either misled or bullied by Exelon and NRC, at our expense. One supervisor was quoted saying, "both Exelon and NRC have proven track records." Apparently she spent little time fact finding in the public's interest. Neither track record should be relied on for preventing a Limerick Nuclear Power Plant disaster.

Limerick's chairman said, "We have no control over safety issues." Why would Limerick supervisors allow themselves to be convinced they had no power? They were clearly the only people in the region with any say about this deadly threat. Were they easily deceived into giving up that power or did they simply want to quickly rid themselves of enormous responsibility?

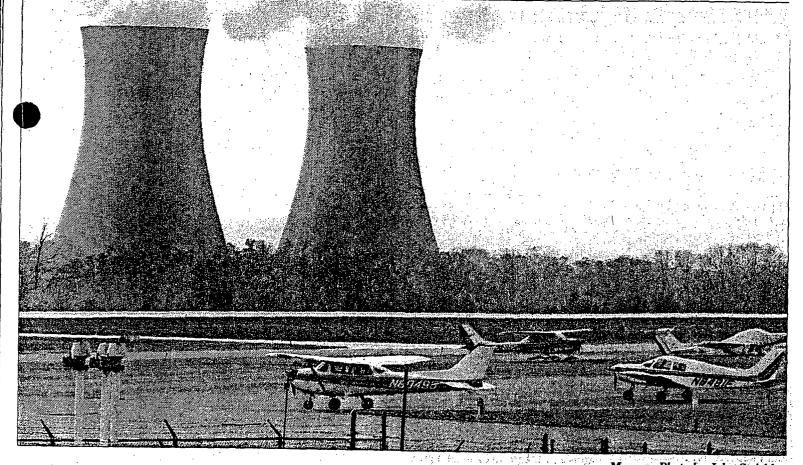
Isn't it the duty of every local official to protect the health, safety and welfare of those who elected them? Isn't it the duty of caring human beings to do whatever it takes to provide the utmost precaution when it comes to increased threats from a nuclear accidental disaster or terrorist attack? This isn't about a concrete pad for a nursery school. It's about storing deadly radioactive waste in our back yard, likely forever.

Limerick supervisors failed this entire region and abandoned the public's interests. They failed to hold off permitting to bargain for security

against air strikes or missile attacks, or insist on minimal increased precaution in cask design planned for Limerick. A few supervisors appear to have recognized the grave threat but blindly expect federal officials to do what they failed to have the courage to do.

Limerick officials told us to contact our federal officials who oversee the Nuclear Regulatory Commission. We'd better do that today before it's too late. Evidence suggests NRC's number one priority is not the public interest.

BILLIE MILLER Schwenksville



Mercury Photo by John Strickler
Airplanes sit tied down to the apron at Pottstown-Limerick Airport on Ridge Pike. The cooling towers of Exclon Nuclear's
Limerick Generating Station are behind the airport. Smaller airports in close proximity to nuclear power facilities are closed
or on a very reduced schedule.

Terror threats shut down local airports

By JOHN GENTZEL Mercury Staff Writer

LIMERICK — Faced with threats of more terrorist attacks, the Federal Aviation Administration has shut down most small airplane activity in the vicinity of many of the country's nuclear power plants.

Issued early this week, the directive temporarily suspends most general aviation operations, corporate flights and other activities (including flight schools) at airports, several of

Governor asked to put troops at nuclear plants - A11

which are located in the looming shadows of Exelon Nuclear's Limerick Generating Station.

All general aviation flying is prohibited within a radius of 10 miles and below 18,000 feet of the 86 "sensitive nuclear sites." The ban on flying over these sites is in addition to previous flight restrictions the FAA has imposed throughout the country.

The ban does not affect most commercial flights, however, as they fly at higher altitudes.

Airports like the Pottstown/Limerick Regional Airport on Ridge Pike and the Pottstown Municipal Airport on Glasgow Street are operating under the restrictions.

Limerick Airport Operations Manager Chris Jordan said that certain parts of the airport's

(See AIRPORTS CLOSED on A3)

ATTACK ASSISTANCE

This newspaper and its parent company, Journal Register Company, through the non-profit charity Journal Register Company Foundation, are helping raise money for the Red Cross Disaster Relief Fund in the wake of the Sept. 11 attacks.



Local* Readers: \$6,095.74 All JRC Readers: \$28,057.85 JRC and Employees:

\$28,728.82

TOTAL: \$56,786.67

TO. CONTRIBUTE: Make check or money order payable to American Red Cross Disaster Relief Fund. MAIL TO: PO Box 1688 Trenton, NJ 08607-1688

Local readers include readers of this newspaper and the other Journal Register Company newspapers in the Philadelphia area.

National Guard to remain at Limerick power plant

 $\sqrt{3}$ -5 -03. By John Gentzel igentzel@pottsmerc.com

LIMERICK - They've been a constant presence at Exelon Nuclear's Limerick Generating Station since the Sept. 11 terrorist attacks, and thanks to a recent gubernatorial order, the National Guard will continue to join state police in protecting the nuclear facility at least until March.

On Tuesday, Gov. Mark Schweiker extended the high-security presence at the state's five nuclear power plants



SCHWEIKER

time Schweiker has extended the disaster-emergency proclama-Sept. 11 terrorist attacks.

until March 4. threats of terror, we need to ensure that ment was not a distraction and did not This is the fifth Pennsylvania's most sensitive facilities receive the highest level of protection we can provide," Schweiker said.

"By extending the Sept. 11 disaster proclamation, we are making sure that tion first ordered Pennsylvania continues to do all it can in November to protect the safety and security of our 2001 - two citizens, and that funding is available to months after the respond if we need to."

Despite the constant presence of heavy artillery at the facility during the "As our nation last year, plant spokeswoman Lisa prepare for unknown Washak said the additional troop place-

disrupt plant operations.

"While Exclon has every confidence in our own security forces' ability to protect Limerick Generating Station. we appreciate the additional measure of security that the National Guard provides us, and we welcome their continued support for as long as necessary." Washak said.

In the proclamation announcing the extension. Schweiker also made an

(See NATIONAL GUARD on A3)

NUCLEAR REALITY CAMPAIGN * PUBLIC CITIZEN * RADIATION AND PUBLIC HEALTH PROJECT * ALLIANCE FOR A CLEAN ENVIRONMENT

NEWS RELEASE

For Immediate Release: October 26, 2004

Contact: Geoff Ower, Nuclear Reality Campaign, 215-743-3767 Brendan Hoffman, Public Citizen, 202-285-1391 Joseph Mangano, Radiation and Public Health Project, 484-948-7965 Donna Cuthbert, Alliance for a Clean Environment, 610-326-2387

Public Interest Groups Urge Exelon to Address Nuclear Plant Security Problems, Avoid Quest for Longer Operating Licenses

PHILADELPHIA – Using the aging Limerick nuclear power plant as a case study as to why nuclear energy is a failing proposition in the U.S., four consumer groups today urged Exelon, the nation's largest nuclear operator, to recognize the dangers of nuclear power by choosing not to renew the operating license of its plant located just 20 miles outside Philadelphia. The groups rallied in front of Exelon-owned PECO headquarters in downtown Philadelphia to urge energy companies such as Exelon to address security risks at the Limerick and other reactors, and to create a new energy plan for future generations that will not create environmental and health risks to consumers.

Exelon owns and operates the Limerick plant in Limerick Township. The Limerick Unit 1 reactor's operating license expires 20 years from today, which means Exelon is now eligible to apply for a 20-year extension. Exelon has not said it intends to renew the Limerick license specifically, but has said it expects to renew most if not all its licenses eventually. It has received or is seeking extensions at four of its ten plants currently. Of 103 operating reactors in the U.S., 26 have received such extensions to date, and an additional 18 applications are pending. None have been rejected.

"Limerick is a prime example of security problems and risks that we shouldn't see in an industry like nuclear power three years after September 11, yet we do," said Brendan Hoffman, a nuclear energy organizer with Washington, D.C.-based Public Citizen. "A reactor with the same design as Limerick would never be built today. The industry and the NRC's soft approach is unacceptable." Public Citizen released a report last week criticizing the inadequacy of domestic security measures that have been taken since the September 11 attacks across a spectrum of industries, including nuclear; it is available at http://www.homelandunsecured.org/.

Also, in August, the Nuclear Security Coalition, a national coalition of more than 45 groups including Public Citizen, petitioned the U.S. Nuclear Regulatory Commission (NRC) to review a security vulnerability present in the design of 32 reactors nation-wide. In those reactors, of which Limerick is one, the highly radioactive spent fuel is stored about five stories above ground and outside the reinforced containment dome that houses the reactor, making it especially vulnerable to aircraft penetration.

Further, the groups pointed to NRC's misguided new plan to allow the private security firm Wackenhut to train and manage the adversary teams that perform "force-on-force" mock terrorist attacks against nuclear plants to measure readiness. Wackenhut already guards nearly half the

plants in the country, including Limerick and all Exelon-owned plants, which poses a conflict of interest and renders such vital security tests meaningless.

While such ongoing security problems should be enough on their own to prohibit a 20-year extension on Limerick's operating license, the groups also described the health risks from nuclear power and criticized the failure to deal effectively with the waste problem.

"It's time that we take seriously the need to move to pollution-free sources of energy as quickly as possible," said Geoff Ower, founder of the Illinois-based Nuclear Reality Campaign, a national student coalition. "We have nowhere to store the waste from nuclear power currently, and Exelon is going around seeking to build new plants and extend operating licenses, which will just create even more waste." Last week, Energy Action, a coalition of student groups including the Nuclear Reality Campaign held nearly 300 rallies around the country to declare independence from polluting energy sources, in the first Energy Independence Day. Exelon has also taken steps toward building a new reactor in Illinois.

Joseph Mangano, MPH, MPA, a public health specialist and national coordinator of the Radiation and Public Health Project, pointed to the threats to public health and safety associated with nuclear reactors. The current rate of thyroid cancer, which is caused by radiation exposure, exceeds the national rate in all southeast Pennsylvania counties, led by Montgomery County (87% higher for males, 59% higher for females). A study of radioactive strontium-90 in baby teeth near the Limerick found the highest levels of areas near seven plants studied. "Routine nuclear operations, and not just a major accident or attack, can harm people," Mangano said.

There are nine additional operating nuclear reactors within 80 miles of the two Limerick reactors, making it the area with the densest concentration of reactors in the country. Mangano has also tracked childhood cancer mortality in Montgomery County, finding that it increased 80% from the late 1980s, when Limerick began operating, to the 1990s. Rates in the rest of Pennsylvania and the U.S. decreased 25% and 18%, respectively, during that time. The county rate is now more than 18% above the state and national rates. Of forty U.S. counties with a population over 900,000, Philadelphia has the highest cancer death rate, for both blacks and whites and both the elderly and middle-aged.

Donna Cuthbert, with the Pottstown-based Alliance for a Clean Environment, said, "It's time we take action and force the industry and NRC to address health, safety, and security problems they have so far refused to recognize." According to the CRAC-2 report submitted to Congress in 1982 by the NRC, an accident or attack at Limerick could quickly cause as many as 74,000 deaths and 610,000 other cases of radiation poisoning, the highest of any U.S. nuclear plant. "With the population up 24% in Montgomery County and as much as 64% in Chester County from the 1970 census data used in the study, the results would be more devastating today. Families in and around Pottstown and Philadelphia deserve to know just what kind of threat is sitting right in their backyard."

Public Citizen

Public Citizen is a national, nonprofit consumer advocacy organization founded in 1971 to represent consumer interests in Congress, the executive branch and the courts. We fight for openness and democratic accountability in government, for the right of consumers to seek redress in the courts; for clean, safe and sustainable energy sources; for social and economic justice in trade policies; for strong health, safety and environmental protections; and for safe, effective and affordable prescription drugs and health care. http://www.citizen.org/

Alliance for a Clean Environment (ACE)

ACE is a non-profit organization based in the Greater Pottstown Area, working on protecting the rights of citizens against the powerful industries which poison our air, water, soil, and food, and consequently threaten our health. ACE's main goal is prevention of unnecessary health and safety risks. ACE believes the Limerick Nuclear Power Plant presents unnecessary threats to both the health and safety of the entire region, which would be eliminated if the plant would close. We cannot afford a renewal of its operating license. http://www.acereport.org/

The Radiation and Public Health Project

The Radiation and Public Health Project is a nonprofit group consisting of scientific and health professionals. Members have published twenty medical journal articles and five books since 1994.

http://www.radiation.org/

Nuclear Reality Campaign

The Nuclear Reality Campaign was founded in 2004 as a national student-youth network to oppose both nuclear power and nuclear weapons. http://www.nrcwatch.org/

WHEREAS Wackenhut has been severely criticized in the past, by both public interest groups and the industry; for poor performance in guarding nuclear plants; and

WHEREAS the NRC currently has authority to eliminate the conflict of interest posed by Wackenhut's dual role by either mandating a different private company be hired to perform the tests at Wackenhut-guarded facilities or by federalizing the mock adversary force;

THEREFORE, BE IT RESOLVED, that the City of Philadelphia opposes the extension of the operating licenses for Limerick Units 1 & 2 until such time as the vulnerability of the spent fuel pools at those reactors is minimized to the greatest extent possible.

BE IT FURTHER RESOLVED, that the City of Philadelphia demands efforts of behalf of Exelon Generation and the NRC to immediately address and ameliorate the vulnerability posed by the spent fuel pools at the Limerick generating station and GE Mark I and II reactors around the country.

BE IT FURTHER RESOLVED, that the City of Philadelphia supports the petition filed on August 10, 2004, pursuant to 10 C.F.R. §2.206, by the 45 member groups of the Nuclear Security Coalition, and its request that NRC:

- (i) issue a Demand For Information to the licensees for all Mark I and II BWRs and conduct a 6-month study of options for addressing structural vulnerabilities;
- (ii) present the findings of the study at a national conference attended by all interested stakeholders, providing for transcribed comments and questions;
- (iii) develop a comprehensive plan that accounts for stakeholder concerns and addresses. structural vulnerabilities of all Mark I and II BWRs within an 12-month period;
 - (iv) issue Orders to the licensees for all Mark I and II BWRs compelling incorporation of a comprehensive set of protective measures, including structural protections; and
- make future operation of each Mark I and II BWR contingent on addressing their structural vulnerability with participation and oversight by a panel of local stakeholders.

THEREFORE, BE IT RESOLVED, that the City of Philadelphia opposes the extension of the operating licenses for Limerick Units 1 & 2 until such time as the security of the facilities can be assured through meaningful testing free of conflicts of interest.

BE IT FURTHER RESOLVED, that the City of Philadelphia calls on the NRC to comply with 48 C.F.R. Subpart 2009.5 by declaring that Wackenhut Corporation is ineligible to receive a contract to perform force-on-force tests at nuclear plants which it guards, based on the present conflict of interest.

BE IT FURTHER RESOLVED, that the City of Philadelphia supports the establishment of a federal mock adversary force to conduct force-on-force tests.

BE IT FURTHER RESOLVED, that the City of Philadelphia urges the NRC to charge adequate fees to the nuclear industry to support a well-trained and well-equipped federal guard force for the purposes of testing physical security at our country's nuclear power plants.

. .

BE IT FURTHER RESOLVED, that the City of Philadelphia will communicate its support for stronger nuclear security standards and better public access to security-related information to its employees and agents who manage or administer any funds held by the City of Philadelphia, to institutions and groups with which the City of Philadelphia is affiliated, to state representatives and the Governor, to Members of the United States Congress, appropriate federal agencies, and to the news media.



Resolution Opposing License Extension at Limerick Generating Station

WHEREAS the Limerick nuclear power plant is located only 21 miles from the City of Philadelphia; and

WHEREAS an accident or attack at the Limerick nuclear plant could cause 74,000 peak early fatalities, 610,000 peak early injuries, 34,000 cancer deaths and \$213 billion in property damages, based on the U.S. Nuclear Regulatory Commission's 1982 CRAC-2 report; and

WHEREAS the worst-case accident or attack would likely have much more severe consequences today, with inflation, updated computer codes, and local counties showing population growths of up to 64% over the 1970 census data used in the CRAC-2 study; and

WHEREAS terrorists demonstrated on September 11, 2001, their willingness to attack America on its own soil and kill thousands of people, and al Qaeda has declared its willingness and intention to perpetrate further attacks on America; and

WHEREAS investigations by the 9/11 Commission has revealed terrorists' interest in attacking commercial nuclear power plants; and

WHEREAS the U.S. Nuclear Regulatory Commission (NRC) is charged with overseeing the implementation of adequate security measures at commercial nuclear power plants; and



WHEREAS the Limerick Units 1 and 2 are both of the GE Mark II design, where the spent fuel pools are located over 60 feet above ground and outside the reinforced containment dome that houses the reactor; and

WHEREAS the NRC stated on the record in October 2000 that "...Mark I and II secondary containments generally do not appear to have any significant structures that might reduce the likelihood of aircraft penetration;" and

WHEREAS an aircraft crash would likely lead to breach of the fuel pool and the loss of cooling water from the pool, potentially causing the zirconium cladding on the fuel rod assemblies to ignite, releasing up to 100% of the radiation contained therein; and

WHEREAS the consequences of such a large release of radiation from a fuel pool fire would be devastating and deadly to the surrounding community and those hundreds of miles away; and

WHEREAS such a danger persists for as long as the fuel remains in the pool, whether the reactor is operational or not; and

WHEREAS a reactor with such design features is no longer licensed for construction; and

WHEREAS meaningful tests of security are necessary to ensure nuclear power plants achieve and maintain a level of security commensurate with the dangers posed by a possible attack; and



WHEREAS hiring Wackenhut simultaneously provide guards at the Limerick plant and perform force-onforce security tests to verify compliance with the newly revised "design basis threat is a blatant conflict of interest and throws the validity of such tests into doubt; and

EVACUATION PLANS For A

Limerick Nuclear Plant Radiological Disaster

Are Seriously Flawed

And

Fundamentally Inadequate

One lesson that NRC should have learned from the nuclear disaster at the Fukushima Daiichi plant in Japan, is that the current U.S. requirement of evacuation planning within 10 miles of a nuclear facility is woefully inadequate. Our president urged any U.S. citizens within 50 miles of the Fukushima Daiichi plant be evacuated. With our government now on record having demanded a 50-mile evacuation for U.S. citizens, that is the minimal precaution the 8-million people around Limerick should expect.

Yet, to date, for U.S. nuclear plants, NRC insists on an inadequate unprotective 10-mile evacuation zone, a pro-nuclear thinking position. NRC disregards public health and safety, even after watching the Japan disaster unfold, and learning there is far more risk of a meltdown at U.S nuclear plants.

The U.S. directed Americans within 50 miles of the Fukushima reactors to evacuate. That's a far more realistic distance than a 10-mile evacuation zone. When it is clear that radioactive particles can travel far distances, and that the nuclear industry is less than forthcoming or timely with the truth, why wouldn't people at least 50 miles away be evacuated to avoid unnecessary harms?

U.S. government officials have known for many years that a 10-mile nuclear plant evacuation zone is unrealistic. Government studies have projected death and damage miles beyond that. "There could be deaths out to 150 km," states a report titled "WASH-740-update" done at the U.S. Department of Energy's Brookhaven National Laboratory. An earlier report, "WASH-740," also done at that government laboratory, states "the possible size of the area of such a disaster might be equal to that of the State of Pennsylvania."

The Nuclear Regulatory Commission should stop making decisions that benefit the nuclear industry at the risk of public safety. Limerick should be closed, not relicensed, to avoid the necessity to evacuate. It could be a tragic mistake to keep the evacuation zone artificially low, as is being tragically demonstrated by the nuclear power disaster in Japan.

Over 8 million people live within 50 miles of Limerick Nuclear Plant. Philadelphia is just 21 miles downwind, downstream from Limerick Nuclear Plant. A 50-mile evacuation zone for Limerick would cover Philadelphia and other large cities.

Limerick's reactors have long been troubled with numerous minor accidents and shutdowns, just 3 in one week this past June, 2011. Limerick is located near two earthquakes faults, one nine miles away, the other 17 miles away.

The situation involving a disastrous accident at Limerick would be particularly intense if the winds were blowing toward Philadelphia and the Schuylkill River, which is the predominant wind direction. Safe evacuation would be impossible in the event of a severe nuclear plant accident.

There would be complete gridlock in this heavily populated region as attempts were made to evacuate.

The largest highway and most logical route to evacuate would be in the predominant wind direction. People stuck in traffic jams, which occur even in regular traffic, would continuously be in harm's way, constantly exposed to a toxic brew of deadly radiation from the disaster.

If electricity stopped flowing, people would be trapped in elevators and other electrically controlled locations. Many would be frozen in place as radiation particles are disseminated.

Importantly, since the Three Mile Island nuclear plant accident in 1979, NRC set as a condition for a nuclear plant to operate that there be a workable evacuation plan implemented by state or local government.

Fukushima made it clear that a 50-mile evacuation zone is essential for Limerick Nuclear Plant. Yet evacuating almost 8 million people seems impossible given the enormous population growth and gridlock on planned evacuation routes, even in rush hour.

- ✓ How could we evacuate so many people? Philadelphia is just 21 miles downwind from Limerick.
- ✓ Where would 8 million people go?
- ✓ How could there be enough water, food, shelter, and other basic needs for 8 million people?

The obvious answer is that there is no way to safely evacuate 8 million people. Limerick must be closed, not relicensed.

Safe Evacuation Is An Illusion

- Traffic Gridlock Even In Rush Hour Shows Why
- There's Not Enough Shelter or Supplies For So Many People

TO VERIFY POPULATION FOR LIMERICK NUCLEAR PLANT www.psr.org/evacuation2011

Consequences From An Accident Or Terrorist Attack At Limerick Nuclear Plant

1980 Limerick Accident Consequences Below Calculated and Reported To Congress In 1982.

74,000 Early Fatalities610,000 Early Injuries34,000 Cancer Deaths

Numbers Above Would Be Drastically Higher Today Census Shows - From 1980 to 2010 (2000 and 2010 Census Data)

183% INCREASE in Population

Instead of updating CRAC statistics with new population numbers, NRC has lowered estimated risks. SHAMEFUL!

07/29/11

N.R.C. Lowers Estimate of How Many Would Die in Meltdown

By MATTHEW L. WALD

The commission's old projection of eventual cancer deaths was one for every 2,128 people exposed within 50 miles; the new study projects one cancer death for every 6,250 people exposed, which still comes to hundreds of cancer deaths within the 50-mile circle, in addition to the hundreds of thousands who would be expected to die of cancer from other causes.

Almost 8 Million People Live Within 50 Miles Of Limerick Nuclear Plant

This is far over the 5 million average population within 50 miles

Philadelphia Is 21 Miles Downwind, Downstream

There's Too Much At Risk From A Limerick Meltdown PRECAUTION IS IMPERATIVE!

LESSONS LEARNED FROM JAPAN:

NRC Declared Safe Evacuation For Japan **50 Miles**NRC Evacuation Plan For Limerick **10 Miles**

NRC'S Evacuation Plans Are:

ARBITRARY, POLITICAL, And UNPROTECTIVE

Until Limerick Closes We Urge NRC To Make Limerick's Evacuation Zone 50 Miles - NOT 10

NRC: Update evacuation plans near nuclear plants

By Matthew Daly - Associated Press

The new rules DO NOT CHANGE recommended evacuation zones, which have remained frozen at a 10-mile radius from each plant since they were set in 1978, regardless of aging reactors operating at higher power, risking larger radioactive releases, and skyrocketing populations around some plants - as high as 4 1/2 times higher.

WASHINGTON—Nuclear power plants must provide updated estimates of how long it would take to evacuate nearby communities in an emergency under a new rule approved Tuesday by the Nuclear Regulatory Commission.

The Associated Press reported in June that as America's 104 nuclear reactors have aged, the once-rural areas around them have become far more crowded and difficult to evacuate. By law, evacuations must be prepared for areas within about 10 miles of every nuclear plant, but many plans haven't kept up with changing populations, according to the AP investigation.

Populations around some nuclear plants have swelled as much as 4 1/2 times since 1980, but some estimates of evacuation times have not been updated in decades. Meanwhile, aging reactors have been operating at higher power, risking larger radioactive releases.

An NRC task force recommended a series of changes last month to increase protection at U.S. nuclear sites, including better response to prolonged power blackouts or damage to multiple reactors. The commission set an Oct. 3 deadline for staff to recommend action on 11 of 12 task force recommendations. Staffers were given 18 months to consider a broader recommendation to revamp the agency's overall approach to regulation and safety.

NRC'S NEGLIGENCE IS UNACCEPTABLE AND INFURIATING! Limerick Nuclear Plant's 10-Mile Evacuation Plan didn't change since 1978.

- > But the population around Limerick Nuclear Plant INCREASED by 183%, making it far more difficult to evacuate.
- > Limerick had many signs of aging, with 3 unplanned shutdowns within a week June, 2011. 5 unplanned shutdowns in a year (2007-2008) and several others after that.
- > Earthquakes and other natural disasters are growing stronger and more frequent.
- > Terrorists threats are increasing, now including cyber attacks.
- > Limerick is operating at higher power, risking larger radioactive releases.
- ➤ After Fukushima, we see a 10-mile evacuation zone is woefully inadequate.

NRC NEEDS TO UPDATE THE EVACUATION PLAN FOR LIMERICK, TO INCLUDE 50 MILES. IF EVACUATING ALMOST 8 MILLION PEOPLE IN THE 50 MILES SURROUNDING LIMERICK IS NOT ABLE TO BE PLANNED ADQUATELY, THEN LIMERICK SHOULD CLOSE NOW.

.

LIMERICK MUST CLOSE IT CAN'T BE MADE FAILSAFE

Evidence Shows A Deadly Nuclear Disaster Could Happen At Limerick.

- Limerick is 3rd on the Earthquake Risk List. There were two recent earthquakes in Philadelphia. Even the 8-23-11 Earthquake in Virginia caused what is called an "unusual event" at Limerick.
- Limerick Nuclear Plant Already Had 2 Near Misses 1995 and 2001 (Documented by Greenpeace From NRC Files).
- A Limerick Accident or Terrorist Attack Would Release More Radiation Because Limerick Containment Is Substandard.
- Limerick's Miles of Cables and Underground Pipes Are Corroding and Deteriorating.
- Many Unplanned Shutdowns Were Reported In Recent Years. One Caused Loss of Cooling Water.
- Limerick Is NOT In Compliance With Safest Fire Safety Regulations, Even Though Fires Can Lead To Meltdown.
- Limerick's Fuel Pools Are Overloaded With All Limerick's Deadly Radioactive Wastes Since 1985.
 Our Region Is Now A High-Level Radioactive Waste Dump, Providing An Inviting Target For Terrorists.
- Limerick Is NOT Protected Against 9/11 Type Terrorist Attacks With Planes or Missiles.
 Terrorists Want To Attack Nuclear Plants We Are One of the Most Heavily Populated Regions.
- An Al-Qaida Suspect Worked at Limerick During Refueling Each Year from 2002 to 2008.
- Cyber Attacks on Limerick's Computer Systems Could Lead To A Meltdown.
 Compiled By The Alliance For A Clean Environment Updated August, 2011

The placement of Limerick Nuclear Plant so close to so many people was a dangerous risk. Warnings by many were ignored by NRC and other decision makers.

> There was absolutely no life valuation.

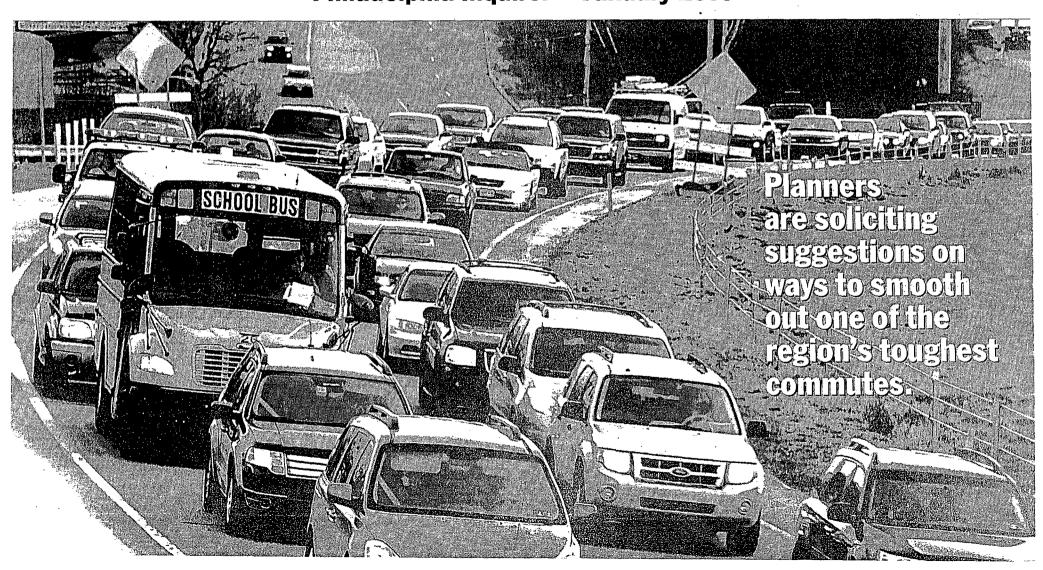
Now population has increased, roads didn't improve, and there are far greater risks for a meltdown.

> We now need the consideration we didn't get before construction.

Limerick Nuclear Plant Must Be Closed As Soon As Possible To Avoid An Unthinkable Disaster Impacting Almost 8 Million People

Safe Evacuation Unlikely Sprawl to Crawl on Route 422

Philadelphia Inquirer - January 2009





OUR JEW

License review should consider evacuation plan

The Nuclear Regulatory Commission announced last week that the renewal process to extend for 20 years the operating license for Exelon Nuclear's Limerick Generating Station is under way.

The announcement is a reminder that the Limerick plant has been online for a few decades, and a lot has changed in that time, most noticeably population growth.

According to data assembled by the Associated Press as part of a recent series on aging nuclear power plants, the population in a 10-mile radius around the Limerick plant has increased by 45 percent since 1990—from 178,047 to 257,625.

That's an increase of nearly 80,000 people.

And in a 50-mile radius — the region evacuated during the Fukushima disaster in Japan — the population around Limerick has increased by more than 855,000 since 1990.

Limerick spokesman Joe Szafran points out that the roadway network has expanded during that time as well. "Remember, when Limerick was built, Route 422 was not even finished," Szafran said. Well, in the years since that road opened, the population growth has made it obsolete as a fast route to anywhere.

A four-part investigative series by the Associated Press published over the past two weeks calls into question the relicensing process for aging nuclear plants in the U.S. and illustrates population growth as one of the factors that have changed the dynamic around plants.

The AP analysis found serious weaknesses in plans for evacuations around plants, including failure to test different scenarios. Plans, including Limerick's, still are for a 10-mile radius even though the disasters at Fukushima and Chernobyl resulted in 50-mile effects.

Those in the nuclear industry point to the worst-case scenarios as situations that "will never happen here." But for the thousands of people whose lives are at stake, the worst case is exactly what preparedness is aimed at.

The evacuation plan for Limerick is just one of many factors that will be considered in the relicensing process. We hope that as this process is conducted, "worst cases" are considered.

The greatest lesson from disasters is that areas where preparedness is lacking are areas where disasters are multiplied. No one wants to consider the possibilities of having to implement an evacuation plan, but that's not a reason to ignore it.



Mercury Editorial: License Review Should Consider Evacuation Plan



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Population soars near nuclear plants

Big population spike causes headache for any emergency plans

Third of four parts.

By Jeff Donn AP National Writer

BUCHANAN, N.Y. — As America's nuclear power plants have aged, the once-rural areas around them have become far more crowded and much more difficult to evacuate. Yet government and

AGING NUELEAR PLANTS A

industry have paid little heed, even as

plants are running at higher power and posing more danger in the event of an accident, an Associated Press investigation has found.

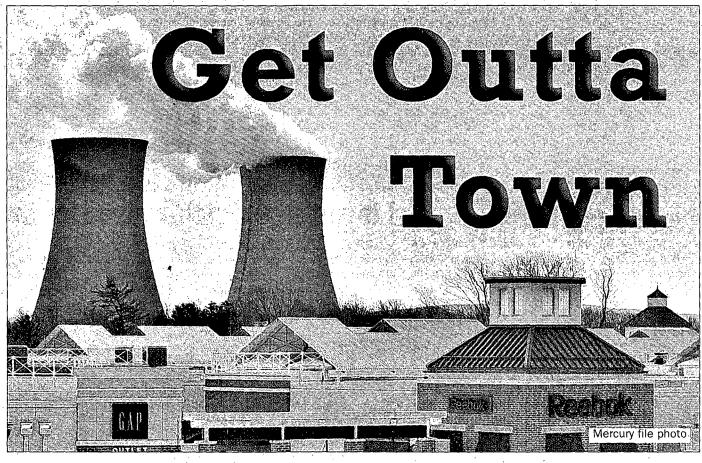
Populations around the facilities have swelled as much as 4½ times since 1980, a computer-assisted population analysis shows.

But some estimates of evacuation times have not been updated in decades, even as the population has increased more than ever imagined. Emergency plans would direct residents to flee on antiquated, two-lane roads that clog hopelessly at rush hour.

And evacuation zones have remained frozen at a 10-mile radius from each plant since they were set in 1978 — despite all that has happened since, including the accidents at Three Mile Island, Chernobyl and Fukushima Daiichi in Japan.

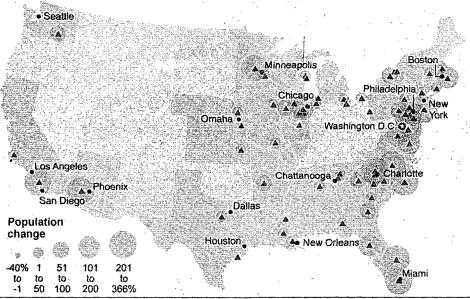
Meanwhile, the dangers have increased.

(See AGING NUKES on A3)



WITH 250,000 PEOPLE WITHIN 10 MILES OF LIMERICK, IS EVEN THE MOST THOROUGH EVACUATION PLAN REALISTIC?

Populations around nuclear plants soar since 1980 Populations around nuclear power plants have increased as much as 4.5 times since 1980 making the once rural areas more difficult to evacuate. Set in 1978, evacuation zones have remained frozen at a 10-mile radius from each site, even as plants run at higher power and are more dangerous in the event of an accident. Population change in 10-mile nuclear evacuation zones from 1980-2010



SOURCES: Nuclear Regulatory Commission; AP data analysi

By Evan Brandtebrandt@pottsmerc.com

We've all thought it, sitting in traffic on Route 422 and looking at the cooling towers of the Limerick Generating Station looming over the landscape: "If I can't even get to King of Prussia at 7 a.m., how are they ever going to get us out of here if that place goes?"

That question is particularly relevant when you consider how much the region's population has grown since the plant was built.

According to data assembled by the Associated Press as part of its series on aging nuclear power plants, the population in a 10-mile radius around Exelon Nuclear's Limerick Generating Station has increased by 45 percent since 1990 — from 178,047 to 257,625

That's an increase of nearly 80,000 people.

That puts Limerick about in the middle of population increases near

(See LIMERICK on A3

News, scores, insights on Twitter @PottsMercSports @mercbiz @merceditor @MercurvX





AGING NU LEAR **PLANTS**

Population soars near Limerick plant

(LIMERICK from A1)

nuclear power plants around the country, according to the AP data.

For example, since 1980, the population in the 10 miles around the Monticello nuclear plant in Minnesota has jumped by a whopping 314 percent.

By contrast, here in Pennsylvania, the population in the 10 miles Exelon staff updates are rearound the Beaver Valley plant in viewed, something that happens Shippingport, has dropped by 23 percent since 1980.

And in a 50-mile radius - the population around Limerick has increased by more than 855.000 Szafran said. since 1990.

That's a 12 percent increase. That's also a lot of people.

But it's important to remember, Szafran, that the roadway network has expanded during that time as well.

finished," Szafran said.

emergency evacuation plans the since they were first devised."

Population 1	0-Mile Radius	50-Mile Radius
1990 Census	178,047	7,191,565
2000 Census	215,391	NA
Percentage Increase	21%	NA
2010 Census	257,625	8,047,002
Increase since 1990	45%	12%

Source: Associated Press

actually constantly in some form or another.

> Growth in the region has slowplan will be adjusted to handle it. said.

to evacuate," he said, adding "there will never be a time when said Limerick spokesman Joe there are too many people to evacuate."

Ruth Miller, deputy press secretae evacuation centers. ry for the Pennsylvania Emergency "Remember, when Limerick Management Agency, said the found there. was built. Route 422 was not even evacuation plan for Limerick was last updated in 2008, but acknowl-He said the increases in popula- edged that "there have been no setion are taken into account as the rious changes to evacuation routes

It's important to note, she said, for Limerick. that the routes are not the only comes necessary.

"People are free to leave by any region evacuated during the Fu- ed because of the slowing econ- road they want so long as it is where mass care centers would be kushima disaster in Japan - the omy, but even if it picks up, the not blocked by officials, Miller set up and shelter provided,

> The evacuation routes "are "I don't think we will ever get to guidance to the reception centers the point where we won't be able if you don't have a plan of where time estimates, saying she conto go."

> > through the phone book knows, much of the information about points and numbers to call can be

Exelon also has a 16-page booklet it mails out once a year and which is available at www.exeloncorp.com/PowerPlants/limerick/

The centers are also where ways to leave the area if it be-school children would be taken in the event of an evacuation, where questions can be answered, Miller said.

Miller declined to release any information about evacuation sulted with PEMA's legal counsel As anyone who has looked and was advised the information. while provided to PEMA, is "owned by utilities" and "is not pick-up ours to release."

Of course not every accident requires an evacuation.

Exelon outlines four kinds of in-phone numbers." cidents:

profile.aspx — Exelon's website security threat and no release of number is 610-631-9700.

radioactive material requiring offsite response.

- Alert: Events that involve "probably life-threatening risk to site personnel or damage to site equipment" because of a hostile act. Any releases "are expected to be small fractions" of safety guidelines.
- Site Area Emergency: Involves "major failures of plant functions needed for protection of the public;" but still, releases under this scenario "are not expected to result in exposure levels" bevond safety guidelines beyond the boundary of the site.
- General Emergency: Involves "actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed" safety guidelines for radiation exposure off-site.

Area residents can also take advantage of "rumor control tele-

In Berks, that number is 610-• Unusual Event: Indicates a 320-6150: in Chester it's 610-344potential degradation of safety or 4785 and in Montgomery the

Why would anyone believe NRC is protecting public health and safety?

08/30/11 NRC: Update evacuation plans near nuclear plants
By Matthew Daly - Associated Press

The <u>new rules do not change recommended evacuation</u> zones, which have remained frozen at a 10-mile radius from each plant since they were set in 1978, regardless of

- √ Aging reactors operating at higher power
- ✓ Risking larger radioactive releases
- √ Skyrocketing populations around some plants as high as 4 1/2 times higher.

WASHINGTON—Nuclear power plants must provide updated estimates of how long it would take to evacuate nearby communities in an emergency under a new rule approved Tuesday by the Nuclear Regulatory Commission.

The Associated Press reported in June that as America's 104 nuclear reactors have aged, the once-rural areas around them have become far more crowded and difficult to evacuate. By law, evacuations must be prepared for areas within about 10 miles of every nuclear plant, but many plans haven't kept up with changing populations, according to the AP investigation.

04/05/11 "NRC's Pro-Nuke Spin on Evacuation Zones,"

U.S. government officials have known for many years that a 10-mile nuclear plant evacuation zone is unrealistic. Government studies have projected death and damage miles beyond that. "There could be deaths out to 150 km," states a report titled "WASH-740-update" done at the U.S. Department of Energy's Brookhaven National Laboratory. An earlier report, "WASH-740," also done at that government laboratory, states "the possible size of the area of such a disaster might be equal to that of the State of Pennsylvania." However, the Nuclear Regulatory Commission is an avid booster of nuclear power. It has never denied a construction or operating license for a nuclear plant anywhere, anytime in the U.S. The NRC seeks not to do anything that would discourage the development of atomic energy -- so it has kept to an evacuation zone artificially low, ... tragically demonstrated by the nuclear power disaster in Japan.

The Alliance For A Clean Environment (ACE)

1189 Foxview Road Pottstown, PA 19465

Executive Summary - August 2009

ACE is urging the Nuclear Regulatory Commission (NRC) to plan far more precautionary and protective requirements in emergency planning, in order to minimize harmful health impacts from radioactive poisoning, resulting from a nuclear power plant accident or terrorist attack

> A nuclear power plant accident or terrorist attack would clearly bring unprecedented harms to public health, the environment, and our already severely stressed economy.

Based on evidence from ACE's 8-year investigation of independent research, it is clear we cannot afford a nuclear plant accident or terrorist attack, yet the nuclear industry and NRC deceptively continue to minimize threats, instead of providing the safest precautions related to prevention of radiation exposure.

If major concerns related to radiation exposure (identified in our detailed comments), were acknowledged, considered, and fully addressed, by those at NRC who have the integrity to face reality and the courage to speak out, we believe the degree of radioactive poisoning from a nuclear power plant accident or terrorist attack and the resulting costs to the public could be significantly minimized. Based on what is at stake, NRC must begin to protect the public's interests with up-front preparedness, instead of continuing the back-end approach that protects only the bottom line of the nuclear industry. The public can't afford to let a disaster happen and only plan to deal with the devastating consequences after the fact.

ACE believes within our detailed comments we have identified the reality of the threats and made the case for why it is imperative for the nuclear industry to be required to provide far more preventive and protective actions. Identified below are precautionary and preventive actions which, if followed, would clearly lead to reduced public health risks from radiation poisoning and related public costs.

ACE Urges NRC To Require All Nuclear Power Plant Operators To:

- Immediately notify the public of any radiation release due to an accident or attack.
- 2. Pay substantial fines for failure to provide immediate notification of any accident or attack, regardless of the levels or amounts of each radionuclide released.
- 3. Provide funding for independent public education in regions around nuclear plants on:
 - Radiation health impacts related to all types of radionclides released from nuclear power plants, with full and accurate disclosure to promote immediate evacuation, with special classes on impacts to fetuses and children.
 - ✓ Educate the public in self-treatment for radiation poisoning since there would not be enough hospitals or other places to get treatment.
 - ✓ Provide well advertised full disclosure programming at least once a year focusing on detailed evacuation emergency plans (including why, where, and how), on all TV and radio stations within 50 miles of each nuclear plant.
 - ✓ Teach the most protective sheltering in place procedures to guard against all radionuclides potentially released.
 - ✓ Provide comprehensive checklists to all residents in the region, including all supplies essential to prepare for evacuation and/or sheltering
- 4. Guard against air strikes, missile attacks, and a larger number of terrorists.
- 5. Require back-up batteries for emergency sirens at all nuclear plants.
- 6. Remove all on-line aerial views of nuclear power plants.

- 7. Conduct a detailed virtual evacuation exercise annually using the most current population counts and traffic studies for the region around each nuclear plant. The exercise and NRC's evaluation should be made available to the public on the NRC and FEMA websites.
- 8. Pay the cost for evacuation plans for pre-school and day-care centers.
- 9. Pay for additional vehicles and drivers to complete immediate transport of all students from every school district in the EPZ at one time.
- 10. Expand the evacuation zone to at least 50 miles, a more realistic number of miles affected by a radiation release, particularly in the predominant wind direction.
- 11. Account for the wind direction at the time of the radiation release to avoid having masses of people evacuating with the plume. People should be told they may be asked to shelter in place or go a different direction.
- 12. Pay to build shelters at least 50 miles away in each direction from the nuclear plant. Shelters should be built like bomb shelters, since people would be facing the same kind of radiation poisoning as with a bomb.
 - Expand the number of public shelters to more realistically accommodate the population around each nuclear plant, including food and water supplies.
 - ✓ A section in each shelter should accommodate pets.

ACE Requests A Response From NRC As Soon As Possible:

- A. We request that our executive summary and entire detailed comments be posted on the NRC website.
- B. We request that NRC give careful consideration to the reality of the serious threats from a nuclear power plant accident or attack, identified with evidence in our detailed comments.
- C. ACE requests that NRC improve prevention, precaution, and the emergency plan related to nuclear power plant accidents and terrorists attacks by complying with the list of 12 requests above, made by residents in our region. If NRC does not comply with requests, please provide justification.

Date:

August, 2009

To:

NRC Rulemakings and Adjudications Staff

Secretary, U.S. NRC

Washington, D.C. 20555-0001

From:

The Alliance For A Clean Environment (ACE)

1189 Foxview Road

Pottstown, PA 19465

Re:

Response To Agencies Seeking Input
On Rules and Plans For Emergencies
Related To Nuclear Power Plants

ACE Comments Include Requests That NRC Take Action To Reduce Radiation Exposures In NRC's Proposed Rule Amending For Emergency Preparedness Requirements For Licensed Nuclear Facilities.

ACE appreciates the opportunity to comment on these important issues. It is our hope that NRC employees who review our comments will do so with an open mind and have the courage to speak up in support of our requests in an attempt to minimize the degree of radiation poisoning to protect public health and safety in the event of a nuclear power plant accident or attack.

Emergency preparedness requirements have major implications for our region, which is the home of Limerick Nuclear Power Plant. Residents have long expressed many serious concerns to ACE, related to emergency planning requirements. We welcome this opportunity to now bring all their most serious concerns to NRC's attention.

Based on our 8-year investigation, we do not believe the proposed emergency plan deals realistically or comprehensively with all harmful health impacts to the public from radiation poisoning due to a nuclear power plant accident or terrorist attack. We believe harmful health impacts could be minimized with improved up-front realistic emergency planning and stricter enforcement of regulations that already exist.

Clearly, of utmost importance is precaution and prevention. A nuclear power plant accident or terrorist attack would be a costly unthinkable disaster and must be prevented with the utmost precaution, regardless of the potential costs to the nuclear industry. It appears that currently NRC is valuing costs to the nuclear industry over the realistic need to protect public health and safety.

A nuclear power plant accident or terrorist attack would clearly bring unprecedented, long lasting harms to public health, the environment, and our already severely stressed economy. Statistics below show why we are concerned and why it is imperative for NRC to take this threat seriously enough to require the nuclear industry to provide the most precautionary measures.

Limerick Nuclear Plant Accident Calculations Based On 1980 Data (CRAC Report To Congress 1982)

- √ 74,000 Early Fatalities
- √ 610,000 Early Injuries
- ✓ 34,000 Cancer Deaths

Fatalities, Injuries, Cancer Deaths Would Be Far Higher Today Limerick Area Population Growth (2000 Census)

- √ 1980'S 26 % INCREASE
- √ 1990'S 102 % INCREASE

Estimated Costs (2004 Dollars) - TAXPAYERS PAY All Costs Over \$10 Billion

- ✓ \$417 Billion
- Limerick 1
- ✓ \$386 Billion
- Limerick 2

Evidence suggests we cannot afford a nuclear plant accident or terrorist attack, yet the nuclear industry and NRC deceptively minimize threats instead of providing the safest precautions. They also fail to follow and enforce some safety regulations that are in place.

ACE's 8-year investigation related to Limerick Nuclear Power Plant's threats to our region due to accidents and terrorist attacks started after 9/11. Evidence is clear, to best protect the public's health and financial interests, NRC must start to require far more preventive and protective actions from the nuclear industry and strictly enforced all regulations that are in place, related to the actual potential for devastating accidents and terrorists attacks at nuclear plants.

ACE repeatedly shared results of our findings related to emergency planning through our local cable weekly TV shows that go out to 65,000 homes. From the region's residents who contacted us after our TV shows, it became clear that vast numbers of people did not understand the radiation health threats and impacts from a nuclear power plant accident or attack. Therefore, they were not taking personal emergency planning seriously. Most were totally unprepared and had no idea what to do to protect their families, including which roads they were to take during evacuation or where they should go. Others shared the concerns and suggestions we have identified in this document.

After reviewing NRC's Federal Register Document 10 CFR Parts 50 and 52, Enhancements to Emergency Preparedness Regulations; Proposed Rule, published on line May 18, 2009, we believe the emergency plan and recommended enhancements do not adequately address precaution and prevention or the reality of public impacts from all aspects of radiation exposure due to a nuclear disaster. Many concerns we are raising still remain unaddressed in NRC's proposed changes. The complicated procedures listed in NRC's requirements provide the illusion of protection. However, we believe they fall far short of requiring the most precautionary measures to avoid an accident or attack, and fail to plan to adequately prevent prolonged unnecessary radiation exposures. Most nuclear industry positions in the current document being reviewed are clearly not in the public's best interests.

First and foremost, people within 50 miles of nuclear plants need better access to education about radiation exposure risks, with full and accurate disclosure about the harmful health impacts from all the types of radiation that would be released in a nuclear plant disaster. Only then will most people take meaningful action in preparing to protect their families.

Based on what is at stake for the public, ACE believes if major concerns we will identify in these comments on emergency planning would be acknowledged, considered, and fully addressed by NRC, the public's interests would be far better served and the degree of some harms from a potential nuclear disaster could be minimized.

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Detailed Information Follows That Supports Our Requests

1. <u>Immediate Notification Of A Nuclear Power Plant Accident Or Terrorist Attack Is Imperative</u>

Full and accurate disclosure on the health harm from radiation exposure due to nuclear power plant emissions is imperative. To make the most protective decisions and take precautionary action for their families, people need to be told the truth about radiation's harmful health impacts and they must be notified immediately after a nuclear power plant accident or attack - not days, hours, or even 15 minutes later.

Many reputable scientists (based on their research) believe there is no safe dose of radiation exposure - that there is no threshold for radiation damage to humans - no dose which is

harmless. Every minute the nuclear industry waits to notify the public is time lost in attempting to prevent unnecessary radiation poisoning.

At public meetings it became clear to us NRC fails to take radiation exposure seriously and has no intention of immediate notification for radiation released during accidents.

NRC officials stated publically (confirmed with video) that:

- ✓ Public notification could be in hours or days;
- ✓ Notification would only take place if levels were high enough;
- ✓ Radiation released may not escape off-site.

Based on independent radiation exposure research that concludes there is "no safe dose", these NRC statements and positions not only defy logic, they indicate the failure of NRC to adequately protect public health and safety. This has major implications related to emergency requirements for notification of a nuclear power plant accident or attack and emergency preparedness.

We ask why NRC is unwilling to recognize and respond to independent scientific research related to radiation exposure. How can the public have confidence in NRC's will or ability to protect public health? Many of our region's residents have questioned whether NRC has been deceived by nuclear industry funded science for sale, or co-opted.

As expected, the nuclear industry continues to deceptively claim doses are too small to cause harm. They dismiss concern using illogical industry funded spin. Inexplicably, NRC repeatedly defends and supports the nuclear industry, instead of using independent research to revise radiation standards to be more protective, taking actual measurements for all kinds of radiation released from the nuclear plants, and requiring all the most protective safeguards.

The facts are clear. A broad range of radionuclides are routinely and accidently released from nuclear power plants. That same broad range of radionuclides would be released in a disaster situation. No one can accurately determine the harmful impacts to individuals, especially fetuses, children and those already suffering from cancer and other serious illnesses. Synergistic, additive, and cumulative harmful health impacts from radiation releases are unknown. When preparing for emergencies after a nuclear disaster, the reality of the potential for harmful health impacts from radiation exposure should be the driving force in all emergency preparedness decisions.

It is better to be informed immediately than to be unnecessarily, unknowingly poisoned. To best protect public health NRC needs to deal with the reality of radiation exposure and demand immediate notification by the nuclear industry.

- People must be given immediate notification of any radiation accident or terrorist attack to have the opportunity to take immediate action to avoid exposure to the degree possible.
- NRC's dismissive attitude about harmful impacts of radiation exposure allows the nuclear industry to have far too much time to inform the public after a radiation accident.

It is unacceptable to fail to provide immediate, full and accurate disclosure,

- ✓ Each minute, hour, or day the public remains unaware, is precious time families could be taking action to minimize harmful health impacts by immediate evacuation or sheltering in place.
- ✓ Those responsible appear more concerned about hiding the truth to 'avoid panic' than preventing unnecessary radiation exposure to the public. Potential panic is no excuse to avoid full and accurate disclosure. It's better to be panicked than poisoned. Panic can be minimized with better education on radiation exposures and emergency preparedness.
- Radiation amounts released should not determine whether or not to immediately notify the public, especially since it is impossible to determine accurate levels of

- all radionuclides released or what the synergistic harmful impacts will be to any fetus, child, or individual.
- ✓ We should not have to wait for notification until the nuclear industry's public relations spin machine gets a whitewash prepared.
- ✓ It is inexcusable to wait until the nuclear industry attempts to correct the problem(s) causing the radiation releases. All the while people are being exposed and uninformed.
- ✓ The nuclear industry had leaks which went unreported and/or were only reported after the leak was corrected.
- ✓ At Limerick for example, we identified accidents or releases of radiation above their routine releases, when Exelon waited far too long to inform the newspaper. It was far too late for parents or pregnant women to attempt to avoid exposure.
- ✓ The big mistake at TMI. It was days before the pubic was notified. People were unnecessarily exposed to increased amounts of radiation for days when they could have made a decision to leave the area to better protect their families...
- 2. Potassium lodide (KI) pills A deceptive illusion that could lead to a false sense of protection and unprotective decisions. A broad range of radionuclides would be released during a nuclear power plant accident or attack. The public needs to be told the whole truth and advised about how to best protect their families from all types of radionuclies that could be released during a nuclear power plant accident or attack. Handing out KI pills leads people to believe they are protected, when in reality KI pills protect against only one type of radiation. A false sense of protection can lead to decisions that could unnecessarily further jeopardize people.
 - To best protect the public, they need to be better educated about how to best protect their families from all types of radionuclides that could be released in a nuclear disaster. It should be clearly explained that KI pills protect people from just one of the radionuclides that would be released during a nuclear power plant accident or attack.
- 3. The evacuation plan fails to account for the wind direction of the radiation plume after the accident or attack. Instead of traveling away from radiation releases in evacuation, large numbers of people would be traveling with the radiation released, increasing their exposure risk. Gridlock due to accidents, breakdowns, or just from heavy traffic would further extend exposure time in the plume. This is a serious oversight and flaw in the evacuation plan.
 - The evacuation plan needs to redirect people in the predominant wind direction away from the plume of a nuclear disaster, to take another route to avoid prolonged radiation exposure or advise them to shelter in place until the safest route of evacuation can be determined.
- 4. 10-Mile Evacuation Protection Zone (EPZ) is inadequate. Evidence suggests people hundreds of miles away could be impacted. Chernobyl taught us radiation released during an accident can travel great distances. 50 miles was first discussed in official documents during Limerick planning. So why is the EPZ only 10 miles, especially in the predominant wind direction? There is no magic radiation shield at 10 miles. Vast numbers of people would never even be warned to protect their families. For example in our region, Philadelphia is only 21 miles in the predominant wind direction from Limerick Nuclear Power Plant.
 - The Emergency Preparedness Plan needs to extend the EPZ much farther to be more protective of public health.
- 5. Back-up power for warning sirens is not required at Limerick and many other nuclear power plants. It is ludicrous to believe in densely populated areas around nuclear plants that it is practical or acceptable to rely on bull horns and door knocking to alert hundreds of thousands of people. Even if emergency personnel would not abandon the mission to avoid their own radiation exposure, their time would be far better spent dealing with emergencies that would

result from a nuclear disaster. August, 2006 it was reported that out of the 63 nuclear power stations across the U.S., only 17 had sirens that could be heard during a power failure.

During an August, 2006 power outage around Limerick Nuclear Plant, 48 of 165 off-site sirens were off-line for 5 days. Instead of providing back-up power for sirens in black-outs, Exelon illogically still plans to warn potentially hundreds of thousands of people of a radiological emergency with emergency workers driving through the vast numbers of crowded streets making announcements with bull horns or knocking on doors, all while people are attempting to evacuate.

For NRC to allow Exelon or other wealthy corporations to refuse to provide back-up power for warning sirens in a blackout is an inexplicable and unacceptable risk to public safety. All nuclear plants owners must be required to provide back-up power for sirens during a blackout to avoid unnecessary radiation exposures. Reliable back-up power for warning sirens at all nuclear plants would insure far more timely notification of an accident or attack. Emergency workers' time would not be spent helping needy people to evacuate or with people suffering from radiation poisoning.

6. The Emergency Evacuation Plan is unrealistic and unworkable in heavily populated regions such as the region around Limerick Nuclear Power Plant.

For example, the region around Limerick Nuclear Plant is too heavily populated for a timely or safe evacuation.

- The 2000 Census showed well over ¼ million people live within 10 miles of Limerick.
- Vast numbers of people would attempt to use Route 422 during an evacuation.
- January 18, 2009 the Philadelphia Inquirer article "Sprawl to Crawl on Route 422" said
 the Route 422 corridor is home to an estimated 296,000 residents. Population is
 expected to increase 12% by 2030. Route 422 was called the spine of one of the fastest
 growing corridors in Southeast PA.
- Daily backups surface in several spots on Route 422 during rush hour. The Inquirer reported average daily traffic now reaches 102,000 vehicles in spots.
- October, 2005 the Mercury pictured massive gridlock on 422 caused by an accident and suggested an emergency evacuation of the area could produce similar traffic congestion.
 In fact, evacuation gridlock could be even far worse. Restricting lanes to 1 direction of travel would not be applicable to Route 422 if residents in the 10 mile zone were ordered to leave.

Hurricane Katrina and the 2007 snow emergency in PA demonstrated that we are ill equipped to evacuate large populations in the event of a radiological emergency.

- If we can't get people off a highway for more than 24 hours due to snow and ice, how are
 we going to safely evacuate an entire enormous population around Limerick or another
 nuclear plant from a radiological emergency where immediate escape is crucial to avoid
 unnecessary cancers and other serious health threats?
- Katrina led to motorists reporting traveling 20 miles in 9 hours. What could gridlock for that amount of time mean when people could continuously be exposed to radiation released during a nuclear disaster?
- 7. Better education is essential, on how to shelter in place to best protect people from all the kinds of radiation that would be released in a nuclear power plant accident or attack.

 Starting with the truth about the actual risk from radiation exposure, we believe NRC has a responsibility to do far more comprehensive education in how to shelter in place to protect families from all the kinds of radiation that would be released during a disaster.

 Information below suggests why people around Limerick need to better understand what would be required to prepare to shelter in place after a nuclear power plant accident or attack at Limerick.

- Limerick area's population growth is staggering 102% in the 1990s, and 26% growth in the 1980s (according to the 2000 Census). From 2000 to 2009 major population growth continued. Vast numbers of new businesses attract out of region residents, including many very close to the nuclear plant. When you couple tens of thousands of vehicles which would be frantically scrambling to attempt to escape with an infrastructure that can barely handle normal day-to-day traffic and congestion, it is easy to understand why safe evacuation is unlikely, if not impossible. Anyone who has driven Route 422 and other major area roads during normal, non-emergency rush hour situations understands the problems and perils of traffic backups. So what would happen if the region tried to flee a radiation emitting catastrophe at Limerick Nuclear Plant?
- Limerick officials in 2001 expressed concern that the emergency plan relies too heavily on volunteers to evacuate the elderly or disabled, to direct traffic, etc. They stated it's not that volunteers are unable to perform the duties required in the plan, but who's to say that these volunteers will "stick around" and "not high tail it out of here with the rest of the population". In Louisiana during the flood some responsible to take care of others did escape instead. We can only imagine what would happen when there would be threats of radiation poisoning from an accident or attack.
- There are 22 schools and day-care centers just within 3 miles from Limerick Nuclear Plant, most in the predominant wind direction.
 - ✓ Large school districts do not have enough buses or drivers to evacuate all children at one time. School bus drivers have admitted to ACE members that they will make the first run, but are unlikely to return for the second. Some questioned their ability to get their school children out during the first run due to traffic congestion.
 - ✓ Allowing the nuclear industry to ignore preschool and day care children in emergency planning around nuclear plants is shameful. As of 2007 day care centers and nursery schools had still been left out of emergency planning even though there has already been a nuclear accident in PA and a 1984 federal law required their inclusion. NRC inexplicably refused to enforce its own law. Was that because the nuclear industry argued that it is not their responsibility to help these kids get out of harm's way? GM EV-2's protective measures still do not appear to be enforced for preschoolers in PA.
- 8. There are not nearly enough shelters planned for heavily populated regions such as the one around Limerick and shelters aren't planned far enough away from the nuclear plant.

 A Red Cross meeting on Limerick's evacuation plans was held after 9/11. A Red Cross worker admitted to an ACE officer that there aren't nearly enough shelters planned for the enormous numbers of residents who would need to evacuate from the region around Limerick. We suspect this would be true around many other nuclear plants as well. We also suspect we could have a shelter situation almost as bad as New Orleans, with no place for so many people to try to find shelter and supplies.
 - Many more shelters need to be planned to accommodate enormous population increases in the region around Limerick and other heavily populated plants and at much greater distances away than 10 miles, especially in the predominant wind direction.
- 9. Facts suggest nuclear power plants are a clear and present danger that each reactor is a potential Chernobyl. It is illogical for the nuclear industry or NRC to continue to falsely claim that a meltdown is highly unlikely.

<u>Facts below dispute nuclear industry deception claiming nuclear power plant</u> accidents are unlikely.

 Nearly 200 "near misses" to nuclear meltdowns (almost major accidents) at U.S. nuclear plants since 1986, were documented in a 2006 Greenpeace report using NRC documentation.

Reported Facts About Limerick Highlight Our Concern In Emergency Planning

- This report revealed 2 such incidents at Limerick Nuclear Plant (1995, Unit 1 and in 2001, Unit 2.)
- ✓ Limerick is one of the plants which has substandard containment, meaning if an accident occurred, much more radioactivity would be released.
- Fire is estimated to be 50% of meltdown risk. The General Accountability Office (GAO) said there were 125 fires reported at 54 power plants since 1995.
 - ✓ Americans are only protected from meltdown risk as a result of a fire when all nuclear plants are in complete compliance with all fire safety laws. October 2008, it was reported that all U.S. plants are still in violation of fire safety rules put in place in 1976 and 1980.
 - ✓ Fire safety rules were put in place after the worst fire ever at an American nuclear plant at Browns Ferry plant in Alabama in 1975, which raged for seven hours. As of April, 2008 a "risk-based approach" was only adopted by 46 of 105 reactors according to the GAO.
 - ✓ To date, it is still not clear if Limerick is in full fire safety compliance. Limerick was not one of the 46 nuclear plants that adopted a risk based approach to fire safety in 2008.
- Lack of water can result in a meltdown. Below are examples of just a few recent incidents where lack of water easily could have led to a disaster.
 - ✓ June 11, 2009 it was reported that a disaster related to lack of water was narrowly avoided and only spotted by chance at Sizewell in England. Two years earlier a burst pipe inside the station led to a huge leak from the pond used to cool thousands of nuclear fuel rods. If the nuclear fuel rods had caught fire, the resulting radioactive plume could have caused a nuclear disaster.
 - ✓ September, 2008, it was reported that the Oconee nuke plant had 2 reactor coolant pumps exceeding reactor cool-down limits, triggering a potentially disastrous loss-of-coolant accident. For 8 ½ hours personnel overlooked an alarm blinking in the control room indicating high levels of radiation inside the reactor containment building.
 - ✓ April 24. 2007 the coolant level of Unit 2 went very low at Limerick Nuclear Plant and caused a shut down. Low coolant level can lead to disaster. Five days after refueling, April 9, 2007 there was a problem with a seal on the pump. 15 days later there was still no explanation.
- Mechanical breakdown, corrosion, and human error are all problems that could easily lead to another nuclear disaster requiring evacuation or sheltering in place.
 - ✓ Nuclear plants are being run harder and longer, increasing the chance for mechanical breakdowns. Just as with cars, the longer and harder they are run, the more chance for mechanical breakdowns. Exelon is running Limerick harder and harder as it ages, increasing the chances for mechanical failure. At Limerick the percent of time in operation has been increasing. From 1999 to 2005, Limerick's reactors were operational 96.7% and 96.3% of the time, according to NRC data through February 2005. It could be only a matter of time before mechanical failure causes a meltdown. Why would we be expected to assume that every back-up emergency system will continue to work every time?
 - Limerick and many other plants now store their deadly high-level radioactive wastes above ground in casks. NRC found problems with the corrosion rates of metals used to store this nuclear waste (January, 2006 report). Each day

Limerick and likely others add hundreds of pounds of corrosive chemicals to the cooling tower waters. Impacts from corrosives in over 35 million gallons of steam released into the air every day from nuclear plants like Limerick are not yet fully understood, but it seems this could be setting up a recipe for future problems related to storage or removal related to corrosion or even fires.

- ✓ Human error has been responsible for previous nuclear disasters. There is no guarantee that human errors won't happen again.
- It only takes one missed mechanical failure to cause a meltdown disaster. There
 were 18 "significant precursors" or equipment failures at U.S. nuclear plants and 337 that
 more modestly increased the risk of a meltdown. A sampling of nuclear safety problems
 since the TMI accident in 1979, that could have led to a meltdown is listed below (USA
 Today).

We list these examples below to remind NRC why the most precautionary emergency plans must be required by NRC, regardless of the cost to the nuclear industry.

- ✓ Corrosion damaged emergency pumps causing leaks 2002
- ✓ Loss of power needed to run vital core cooling systems 1996
- ✓ Misaligned valve prevented water from flowing into the reactor core 1994
- ✓ A broken relief valve for emergency system that injects water into reactor core 1991
- ✓ Emergency tank water got too low because the pump was set at too low a level 2006
- ✓ Debris from water tank's rubber lining floated in water potentially causing failure of all emergency pumps that cool the reactor in case of overheating 2002
- ✓ Electrical breakers to operate pumps to cool the core were faulty 2002
- ✓ Cables to operate core-cooling systems were too close to sprinkler systems in case of fire - 2001

10. Nuclear Plants Are Still Vulnerable To Terrorist Attacks By Plane or Missile.

In spite of unprecedented threats to millions of people from an air strike or missile attack on nuclear plants (a known terrorist capability), NRC won't make decisions to hold the nuclear industry accountable for their extraordinary threat to society. They won't make decisions that cost the nuclear industry more money.

Investigations by the 9/11 Commission revealed terrorists' interest in attacking commercial nuclear power plants. NRC should assume that terrorists will someday use a plane or missile to attempt to attack a nuclear power plant and require the owners to guard against them. Yet the nuclear industry and NRC are refusing to provide protection against the kinds of terrorist attacks that already happened.

Facts suggest it's illogical and negligent for NRC to allow the nuclear industry to avoid the costs to prevent a terrorist attack by a plane or missile. Widespread devastation could result from just one terrorist plane or missile attack on a nuclear plant. Each nuclear reactor is a potential Chernobyl.

If someone by design or by insanity wants to do maximum damage to public health, the environment and to economically dislocate potentially large geographic areas for a long time, nuclear power plants become the target of choice. Curie for curie, nukes have hundreds of times more radioactivity than bombs.

Experts have concluded that a typical nuclear plant (core and waste pools) contain 4 to 5 times more radioactivity than released at Chernobyl and hundreds of times more radioactivity than that released at Hiroshima and Nagasaki.

We can't be expected to assume NRC's policies will prevent tomorrow's attack, when they would not have prevented yesterday's attack. The Union of Concerned Scientists stated that NRC's policy is questionable at best and regulatory malfeasance, at worst. It's the height of hypocrisy for NRC to support the nuclear industry's claim that nuclear plants are safe or that it is not necessary to guard them against planes or missiles.

- Clearly, NRC should require nuclear plant owners to guard against air strikes, missiles, and large group terrorists' attacks.
 - ✓ Nuclear plants like Limerick are especially vulnerable to air attacks like those which already occurred on 9/11.
 - ✓ Many years after the 9/11 Commission Report was released, nuclear plants, including Limerick, are still vulnerable and not protected against plane or missile attacks by terrorists.
 - ✓ In reality, the only protection against terrorists causing a devastating nuclear power plant disaster appears to be a handful of guards that would clearly be unable to stop an air strike, missile attack, or attack by a large number of terrorists.
- There is no acceptable excuse for NRC to fail to require the nuclear industry to be responsible to provide the most precautionary protection against air strikes, missile attacks, and an attack by large numbers of terrorists.
- Nuclear power plants are making record profits while jeopardizing public health and safety to the maximum degree. Given what is at stake, NRC cannot allow the nuclear industry to avoid paying for the utmost precaution and prevention related to potential terrorists strikes on nuclear plants.

Alarming Facts About Unique Vulnerabilities That Must Be Considered:

- GE Mark II design reactors, such as Limerick 1 and 2, are extremely vulnerable to terrorists' attacks for several reasons that should result in required nuclear industry protection against air strikes and missiles.
 - ✓ GE Mark II spent fuel pools are located over 60 feet above ground and outside the reinforced containment dome that houses the reactor.
 - ✓ October 2000 NRC stated on the record that "Mark I and II secondary containments generally do not appear to have any significant structures that might reduce the likelihood of aircraft penetration.
 - ✓ An aircraft crash would likely lead to a breach of the fuel pool and the loss of cooling water from the pool, potentially causing the zirconium cladding on the fuel rod assemblies to ignite, releasing up to 100% of the radiation contained therein.
 - ✓ Such a large release of radiation from a fuel pool fire would be devastating and deadly to the surrounding community and those hundreds of miles away.
 - ✓ This danger persists for as long as the fuel remains in the pool, whether the reactor was operational or not.
- In reality, even small aircraft loaded with fuel could cause a significant radiation leak or a fire that could lead to a meltdown. Yet to date, NRC has failed to acknowledge or address threats from small airplanes.

Terrorists could use small planes from airports too close to nuclear plants to cause great damage and risk.

Damage From Small Planes Must Be Prevented – Limerick Example:

✓ In a 1992 Emergency Preparedness Document for Health Care Facilities, the following statement validates our concern: "Major damage to plant safety

- systems is likely to occur or has occurred due to an ...aircraft crash. explosion"
- ✓ Limerick Airport is about 1 Mile From Limerick Nuclear Power Plant that airport should have been closed immediately after 9/11. There is an airport in Pottstown only 5 miles away, and another close by.
- ✓ Limerick Airport still gives pilots lessons
- ✓ We recently learned that a drunken pilot who flew into the Limerick Airport could not have been shot down if he would have been a terrorist. The attack could not have been prevented.
- ✓ A small plane crash too close to Limerick Nuclear Plant involving a training pilot caused much fear among residents.
- ✓ Helicopters frequently fly in and out of Limerick Airport. One day missiles could easily be launched from a helicopter.
- "Nuke Plants Not Responsible For Airliner Attacks" 1/31/07 Mercury Article by Evan Brandt reveals NRC's failed policies in holding the nuclear industry accountable to protect the public against air attacks on nukes
 - ✓ NRC is not requiring the nuclear industry to provide the protection against 9/11 style terrorists attacks with airplanes or rocket-propelled grenades.
 - ✓ Instead NRC is protecting the financial interests of the nuclear industry at the public's expense.
 - ✓ NRC has allowed the nuclear industry to avoid the protection that is clearly needed in today's world.
 - NRC is relying on post-crash measures and evacuation plans instead of prevention.
 - ✓ Exelon will not be required to protect our region against a plane or missile attack at Limerick Nuclear Power Plant, regardless of the reality of the risks.
 - ✓ The nuclear industry irresponsibly argued that protecting nuclear plants against planes, missiles, or a large ground attack force should be the responsibility of the government.
 - ✓ NRC's new plan assumes that a terrorist attack force would be relatively small and its weapons limited.
 - ✓ Instead of sizing the design basis threat on an actual air or missile strike, NRC bases security standards on what the nuclear industry believes a private guard force can be expected to handle.
 - Senator Barbara Boxer, with jurisdiction over NRC wrote a letter that was ignored, stating "NRC's defense requirement should ensure that ... the plants are prepared to defend against large attacking forces and commercial aircraft."

This must change to protect the public's interests. After 9/11 the public paid the National Guard to protect Limerick Nuclear Power Plant. Clearly, the public can't afford to continue to guard all the nation's nuclear power plants 24 hours a day. And we shouldn't. The nuclear industry is making record profits and taking the public's money to deal with their deadly high-level radioactive wastes, liability, and loan guarantees for new nukes. It is time for this industry to be held accountable for what is their cost of doing business.

Nuke Plants Have Been Turned Into High-Level Radioactive Waste Dumps
Which Provide Large, Hard To Miss, Devastating Targets For Terrorists. For
terrorists who want to do maximum damage to public health, high-level radioactive
wastes stored at nuclear plants provide large hard to miss targets

NRC should require the nuclear industry to protect their on-site defacto high-level radioactive waste dumps from air strikes and missiles.

✓ The Union of Concerned Scientists stated the primary concerns are radioactive fuel within the reactor and spent fuel stored onsite after removal that must continuously be cooled to prevent fire and the disaster that can follow.

- ✓ The nuclear industry has turned nuclear plants like Limerick into defacto highlevel radioactive waste dumps, now storing their deadly high-level radioactive wastes above ground on-site in very large casks, in addition to those stored in the fuel pools.
- ✓ In addition to overflowing high-level radioactive waste fuel pools at nuclear power plants, that if hit by a plane or missile, could cause the devastation of several Hiroshimas, terrorists also have very large inviting targets of the highlevel radioactive wastes being moved and stored above ground in large rows of hard to miss casks.
- ✓ Army testing shows casks can be penetrated by missiles. A Canadian study shows that 10 years after removal from fuel pools the high-level radioactive wastes contain over 211 radioactive chemicals. Some are easily airborne.
- ✓ It is time for NRC to give more weight to independent army testing and logic rather than biased information produced by the National Energy Institute (NEI), the biased lobbying arm of the nuclear industry. Case in point the misleading and illogical report by the NEI after 9/11, claimed that nuclear power plant structures would protect against a release of radiation even if struck by a large commercial jetliner.

NRC should also insure the safety of high-level radioactive wastes stored above ground at nuclear plants from tornados, aircraft crashes, and explosions.

- Even small aircraft loaded with fuel can cause explosions, which could lead to dangerous fires in the above ground high-level radioactive wastes or in releasing the water cooling the deadly wastes in fuel pools.
- ✓ Tornadoes could also play a part in such a nuclear disaster.
- ✓ At Limerick there is also a fault line which was never fully investigated to our knowledge, related to potential impacts on the deadly wastes.
- Virtual Reconnaissance increases security threats from US Nuclear Power Plants.
 Terrorists and saboteurs can see far too much detail, providing advantages to
 attacking forces. NRC should ban the opportunity for virtual reconnaissance on
 all nuclear plants and radioactive waste sites. High resolution mapping Websites
 should be required to remove this information immediately.
 - ✓ An enemy sitting thousands of miles away can determine where all guard towers are located, know where and when all plant shift changes occur, and determine locations of nearby highways and staging areas that could be involved in an evolving attack plan.
 - Terrorists can have a "bird's eye view" of the on-site nuclear waste storage casks.
 - ✓ Some defensive positions of nuclear plant guards are revealed due to the elevated level of clarity and resolution.
 - ✓ These images reveal pathways, stairways and potential staging areas giving terrorists the ability to plan the quickest or best route to specific targeted buildings.
- Lax Security Nuclear power plants still remain vulnerable to terrorist attacks due to NRC's reluctance to immediately detect and/or address lax security. Using Limerick Nuclear Power Plant as an example, we believe NRC must start to take the threat seriously and take immediate action, regardless of costs to the nuclear industry.
 - ✓ Sleeping Guards In 2006 ACE members were contacted by insiders about sleeping guards at Limerick Nuclear Plant and guards involved in romantic episodes on duty. ACE reported the reported dangerous lax security allegations at the yearly NRC meeting in 2006 and in writing following the meeting. We also identified numerous security problems documented at multiple U.S. nuclear facilities guarded by Wackenhut Corporation (the same company guarding

Limerick). We identified a report titled, "Homeland Insecurity: How the Wackenhut Corporation is Compromising American's Nuclear Security."

- Exelon and NRC both defended security by Wackenhut and claimed no problems or knowledge of what we reported.
- Exelon and NRC refused to take action until forced into dealing with lax security issues by Wackenhut when a whistle blower caught a guard sleeping on camera at another nuclear power plant,
- While Wackenhut was finally replaced, in reality NRC and Exelon were either unaware about lax security or were covering up lax security instead. Even though Wackenhut was replaced, the same kinds of things could still be happening undetected or unaddressed.

NRC has ignored serious safety problems because NRC isn't adequately enforcing its standards and has cut back on inspections. This can lead to unacceptably high safety and security risks.

- ✓ Security Guards Claim They Were Overworked and Underpaid. This needs independent investigation and action to make changes that insure the best security. Plant operators found it more profitable to push existing security forces to the limit, rather than hire new guards. Security guards may have been sleeping because they have been pushed to the limit. A national survey found security guards around the country complained about:
 - Frequent 60-hour work weeks some even had 72-hour workweeks
 - Guards complained about:
 Application from as

exhaustion from overtime poor compensation – below janitorial staff .

- ✓ Nuclear Power Plant Security Guards are not highly trained paramilitary forces as was suggested by the lobbying arm of the nuclear industry, the National Energy Institute (NEI) in ads in 2002.
 - Security guards themselves have complained about poor training
 - Some admit they wouldn't be willing to put their lives on the line given the pay and treatment they receive from some in management.
- We Believe Inadequate Numbers of Guards Are Required To Stop A Large Terrorist Attack Force.

Using Limerick for an example - While no one will tell us how many security guards work at Limerick Nuclear Power Plant on each shift, we suspect it's only a handful. If that is accurate, it is imperative for NRC to provide an independent evaluation of the process and require the hiring of more security guards to fully protect the site.

- It is unreasonable to assume a handful of guards can fully protect the 449 acre Limerick Nuclear Power Plant site.
- How could only a few guards eliminate access by boat when the Schuylkill River is a very large border of the site?
- Could a few guards detect terrorists that get onto the site hiding in the industrial rail cars that travel right thought the site?
- ✓ Security Guards are not highly trained, according to an investigation on Security Guards. They have been over worked and underpaid in the past. This should be investigated by NRC. It could explain all the on duty sleeping guards, and why we guestion their readiness in the event of an attack.

Evidence identified in these comments from ACE's 8-year investigation suggests that to truly protect the public's health and financial interests to the degree possible, NRC must start to

require far more preventive and protective actions from the nuclear industry related to the very real potential for deadly accidents and terrorists attacks at their nuclear plants.

ACE is hopeful that in the interest of preventing an unthinkable disaster at a nuclear power plant, the NRC employees who review our comments will have a strong commitment to public health and safety. We urge them to speak up now in support of our requests, in order to best prevent a nuclear power plant disaster and to prevent unnecessary risks to public health and safety in the event a nuclear power plant disaster is not prevented.

Please Inform Us Of Your Response To Our Requests As Soon As Possible:

- 1) ACE requests that our comments be posted on the NRC website.
- 2) ACE requests that NRC give careful consideration to the reality of the threats contained in these comments.
- 3) ACE requests that NRC improve prevention, precaution, and the emergency plan related to nuclear power plant accidents and terrorists attacks by complying with the list of 12 requests made by residents in our region from page 2. If NRC does not comply with requests, please provide justification.

Copies of ACE comments were made available to:

President Obama

U.S. Senator Casey

U.S. Senator Specter

U.S. Senator Barbara Boxer

Congressman Gerlach

Congressman Dent

Congressman Sestak

FEMA

Governor Rendell

PA Senator Rafferty

PA Senator Dinniman

PA Representative Quigley

PA Representative Hennessey

PA Representative Vereb

PA DEP Secretary Hanger

Montgomery County Commissioners, Planning Commission, and Health Department

Chester County Commissioners and Health Department

All Local Governing Municipalities Surrounding Limerick Nuclear Plant

Pottstown Mercury

Philadelphia Inquirer

NRC's Notification System Fails To Protect Public Health.

Radiation Standards That Trigger Public Notification Of Accidental Radioactive Releases Are NOT Based On The Latest Science And Are Not Protective.

Residents need to be alerted immediately by NRC when any radiation level exceeds levels regular everyday releases from Limerick Nuclear Power Plant.

Sheltering in place is not protective. Immediately traveling away from the radiation is the best protection. In order to take immediate action, residents should be warned immediately by NRC.

We live in the evacuation zone of the Limerick Nuclear Power Plant, exposed to low level radioactive releases from everyday operations, larger ones from accidents, and threats of a terrorist attack. It is impossible to see or smell radioactive releases. We must depend on the Limerick Nuclear Power Plant to tell the NRC, local officials, first responders and us, when and how much radiation is released into our air. June 4, 2005, the Mercury reported that Limerick sirens are useless in a blackout. Firemen and police would have to ride through neighborhoods with mobile public address systems or knock door to door. In this heavily populated region, that is hardly protective. People would be unnecessarily exposed for hours or days.

History tells us the public is not informed in a timely manner for precaution and prevention. At Three Mile Island the public was not told the truth until three days after the accident, after the damage was done and countless numbers of people were unnecessarily exposed to radioactive releases.

> Instead of immediate notification to inform the public to evacuate to avoid unnecessary health threats, those responsible appear more concerned about hiding the truth to "avoid panic" than preventing unnecessary radiation exposure to the public.

There have been accidents at Limerick Nuclear Power Plant.
The public was not informed until days later in the newspaper.

- April 20, 1999, the Limerick Nuclear Power Plant had an accident. Eight valves in a condensate system in Unit 1 failed and closed, "possibly due to a computer malfunction." The reactor vessel water level dropped significantly. NRC's report claimed no radiation was released, but without independent verification there is no trust.
- 2. March 8, 2003 the Mercury reported radiation was released into our air from Limerick's Unit 2 nuclear reactor. Limerick did not inform the newspaper until 1 ½ days later.
- 3. July 20, 2005, two days after an incident, the Mercury reported Limerick's Unit 1 Reactor shut itself down. Limerick claimed Unit 1 was shut down properly with no release of radiation. This may or may not be accurate.
- 4. August 10, 2005, multiple community reports were made to ACE and the NRC about a strange cloud above the Limerick Nuclear Power Plant towers. There were reports of rain above the nuclear plant, while all surrounding areas were bright and sunny. At the same time, ACE's Radiation Alert was registering a high total for radiation over one hour. However, the NRC claimed there was no problem. Even if these events were not related, something was wrong. We may never know precisely what happened.

SmartZone Communications Center

aceactivists@comcast.ne

+ Font size -

[NukeNet] NEI uses dead science to hide radiation dangers from reactor

From: roger Herried < rogerh@energy-net.org>

Tue Mar 2 2010 7:27:06 PM

1 attachment

Sender: nukenet-bounces@energyjustice.net

Subject: [NukeNet] NEI uses dead science to hide radiation dangers from reactor

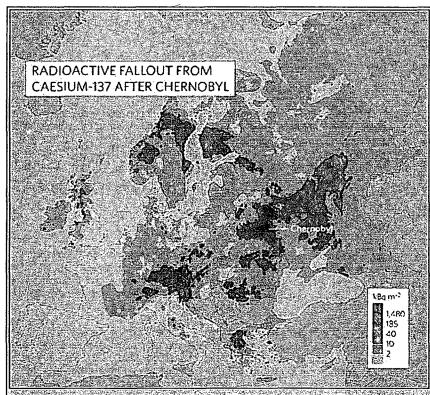
To: Nukenet < nukenet@energyjustice.net >

Below is a first draft response to the below NEI PR safety spin. This NEI release needs to be pounced on as an example of just how weak their arguments are on safety!

NEI uses dead science to hide reactor radiation dangers

Below is a bit over half of the Nuclear Energy Institute (NEI's) recent release in February 2010 claiming that reactor designs and and Potasium capsules within the Evacuation Planning Zone (EPZ) would be enough to protect the public in case of a major radiation release. Its appears that the NEI doesn't seem to know the difference between science and antiquated regulations. This release is nothing more than the latest example of the industry's spin tactics. It starts out with the EPA's 1978 ruling, claiming:

"that a 10-mile radius around a nuclear power plant is an appropriate emergency planning zone in the event that a reactor releases radioactive materials."



The Chernobyl disaster in the Ukraine

 SMITH & N. A. BERESFORD CHERNOBYL: CATASTROPHE AND CONSEQUENCES (PRAXIS, CHICHESTER, 2005)

demonstrated that very large quantities of radiation could travel far beyond the 10 mile EPZ. A brief reminder that reindeer in Scandinavia had to be killed due to contamination, and right up to the present there are still livestock being monitored in the UK for radiation. In fact radiation levels that were danger to pregnant children and the infirm traveled all the way around the world.

NEI's nuclear science then mentions a 2004 National Academy of Science analysis that radiation dangers could be reduced by not eating contaminated foods. Wow, what kind of rocket science did it take for them to come up with this! The NEI doesn't even dare speak about just who might benefit from not eating contaminated foods, how the general public will know what is contaminated or how far away food might actually be contaminated.

The NEI is supposed to be the industry's voice concerning everything nuclear! Probably the most controversial aspect of the Chernobyl disaster was just how far the radiation traveled, and what the real fallout both economically and environmentally were. In their final conclusion they say:

"Beyond the 10-mile EPZ, direct exposure to radioactive materials would be slight because those materials would have dispersed into extremely low concentrations in the air mass"

Yet nowhere do they present any science backed claims to come to the above conclusion!

Today, the mainstream media, thanks to claims made like this press release are telling the public that there is no chance that a release similar to what happened in Chernobyl could ever occur. The same kind of claims were made over thirty years ago prior to Three Mile Island and Chernobyl! Yet, there many aging reactors owned by utility companies that have scrimped on maintenance costs due to the recent economic downturn that could lead to further incidents like the 2001 incident at Davis-Besse that nearly led to a meltdown.

The citizen's of Vermont are moving ahead to close their aging reactors due to growing number of leaks and safety incidents. The city of Sacramento California actually secured the Rancho Seco nuclear reactor closure and recent complete decommissioning (\$500 million prictag) for similar reasons in 1989.

After the 9-11 attack on the World Trade Center the nuclear industry under pressure of concerned activists were forced to address the dangers of terrorist attacks on reactors. Yet, nowhere do they dare mention the concerns about spent fuel ponds representing immense radiation releases that could far surpass releases from reactor core melt.

See bottom to get the full NEI release or check out the last page of two page statement. This is an example of a cheap, poorly done press release that gets circulated to the media as truisms. Yet, a close look demonstrates just how big the holes in their claim is, especially if the below statement is the best they can do!

Below is the title of NEI's release:

Science Proves Potassium Iodide Unnecessary Beyond 10 Miles of a Nuclear Power Plant

What follows is the last 2/3rds of the release:

The Science of Nuclear Power Plant Emergency Planning

The NRC, the U.S. Environmental Protection Agency and other federal agencies determined in 1978 that a 10-mile radius around a nuclear power plant is an appropriate emergency planning

zone in the event that a reactor releases radioactive materials. The projected radiation doses from most major reactor accidents would not be a threat to public health and safety beyond the 10-mile zone, the task force concluded. The multi-agency task force also concluded that a 50-mile EPZ protects the public from limited exposure from consuming contaminated water, milk or food. Protection of the food chain is vital in the event of a serious reactor accident. In a 2004 report, the National Academy of Sciences concluded: "[If] contaminated milk and food had been avoided, most of the resulting thyroid cancers [around Chernobyl] would almost certainly not have occurred." 3

In the United States, detailed emergency plans are in place for both the 10-mile and 50-mile EPZ, and they are tested regularly by plant staff, federal regulators, and state and local emergency management officials.

Use of KI Evaluated Beyond 10-Mile EPZ

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 states that the federal government "shall make available to state and local governments [KI] tablets for stockpiling and for distribution as appropriate to public facilities, such as schools and hospitals, in quantities sufficient to provide adequate protection for the population within 20 miles of a nuclear power plant." The law also states that the government may waive the KI requirement if it determines there is a more effective way to protect the thyroid from exposure to radioactive iodine.

After evaluating the science and policy issues related to KI, the OSTP issued a decision on Jan. 22, 2008, invoking the waiver. "I have determined that a more effective preventive measure does exist for the extended zone covered by the Act, namely avoidance of exposure altogether through evacuation of the potentially affected population and interdiction of contaminated food," wrote OSTP Director John Marburger. He said the probability of a release of radioactive iodine was not at issue, only the potential consequences. However, he noted, "The risk of a severe release of radioactive iodine 10-20 miles from a [nuclear power plant] is on the order of one-in-a-million to one-in-ten-million."

NRC Reviews Requirements

In Light of Terrorist Threat The NRC evaluated the basis for its emergency preparedness requirements following Sept. 11, 2001. In a 2003 report to the commissioners, the NRC staff concluded that the emergency preparedness basis remains valid. However, the NRC staff

The Mercury

A8 / Saturday, March 24, 2007



READERS' VIEWS

Evacuation plan won't work

Safe evacuation from a terrorist attack or an accident at Limerick Nuclear Power Plant is an illusion. Precaution and prevention are imperative.

People stranded for more than 24 hours in freezing temperatures on I-78 shows how ill prepared Pennsylvania is to handle an unannounced emergency. If we can't get people off a highway for more than 24 hours, what would happen if there was a terrorist attack or accident at Limerick Nuclear Power Plant? How could everyone be safely evacuated from the heavily populated 10-mile Emergency Planning Zone around Limerick?

Speedy evacuation in a radiation release is crucial. Look what happened in Louisiana and Texas even knowing major flooding was coming. Sitting in gridlock for hours or days would significantly increase risks from a radiation accident or attack at Limerick.

In 1982 it was estimated and reported to Congress that an accident at Limerick Nuclear Power Plant would result in 74,000 early fatalities, 610,000 early injuries, and 34,000 cancer deaths. With over 100 percent population growth since then, those numbers could more than double.

Shamefully, nuclear power plants, including Limerick, are still not guarded against air strikes or missile attacks by terrorists. On February 13 Scott Peterson from the Nuclear Energy Institute used spin and deception to claim nuclear plants are secure. He tried to discredit the Mercury's Jan. 31 informative article on

nuke plant insecurity. For additional objective information go to www.nirs.org.

If you live within 10 to 30 miles of Limerick, speak up now! Contact all elected officials to do everything in their power to get your family and future generations fully protected. Exclon should be required to:

- Guard their nuclear generators and highlevel radioactive wastes in fuel pools and above ground casks against terrorist missiles and air strikes.
- Install back-up power for sirens during black outs.
- Install electronic monitoring for heat and radiation inside above ground high-level radioactive waste storage casks.
- Provide the safest cask storage system. Limerick's deadly wastes will likely remain there forever and outlive any containers. Cask integrity is still questionable.

For more information contact ACE at 610-326-6433.

ACE BOARD OF DIRECTORS

Letter to Editor

I attended the Nuclear Regulatory Commission meeting about Limerick Nuclear Plant safety and issues related to Japan's nuclear disaster. "Limerick plant ranked 3rd on U.S. quake-risk list", Mercury article 3-17-11), yet NRC couldn't or wouldn't answer my question about the exact location of the fault line closest to Limerick. Someone claimed it went through the Limerick site. Now I'm really curious.

Even after Japan, the Nuclear Regulatory Commission and PA Emergency Management Agency appear unchanged, unrealistic, and irresponsible. There's no plan to expand the evacuation zone or accommodate for the direction of a radioactive plume from Limerick.

Evacuation was discussed. The school evacuation plan is a "Paper Tiger". PEMA's comments suggested they are relying more on a theoretical model and plan for evacuation than reality. I talked to a teacher, principal, and superintendent who believes PEMA evacuation "drills" are limited exercises typically NOT requiring complete physical evacuation, focusing on communications and check lists.

During a terrorist attack or accident at Limerick Nuclear Plant, you better hope your children aren't in school. My child's school said no one would be issuing KI pills, even if I provided them, because there there's no personnel to distribute them. PEMA's representative was dismissive of my concerns, claiming all schools are capable of distributing KI pills.

It was reported some bus drivers said they wouldn't return for a second run after radioactive fallout from Limerick. PEMA claimed there were enough buses to evacuate all children from elementary, middle and high schools in one run. Doubtful! Even IF true, there wouldn't be enough qualified, licensed, or experienced drivers for one run from all schools in the 10-mile zone.

NRC said it would take nine months to decide if improved safety and security are needed. That's unacceptable. Limerick keeps having mechanical problems. Limerick's Unit 2 shut down again 5-29-11 from electrical malfunction (Mercury). February, the same reactor shut down due to recirculating pumps. During 2007, there were 5 unplanned shutdowns and loss of cooling water that couldn't be explained 15 days later. An earth-quake just hit Philadelphia. 2011 is already the deadliest year for tornadoes. Limerick's spent fuel storage poses unacceptable risks. An Al-Qaida suspect worked at Limerick (2002 to 2007) during refueling. A Limerick guard altered his license to hide arrests. Small planes can cause fire which can trigger a meltdown, yet planes and helicopters still fly in and out of Limerick Airport, just a mile away. Helicopter trips are made back and forth to Pottstown Hospital, about a mile away.

NRC just approved plans to operate Limerick harder, and may soon approve Limerick operations 20 years longer (until 2049). Both are far too risky. Say NO to running Limerick harder and longer. 40 years of such risks and threats are more than enough.

We must have immediate improved precaution and prevention at Limerick Nuclear Power Plant. Without your voice that won't happen.

Lorraine Ruppe 2120 Buchert Road Pottstown, PA 19464 (610) 970-7837

READERS' U.E. V.S.

-16-06

Evacuation plan need reevaluating

I am a former resident of the Limerick area for 52 years. On May 27, 1980, I was one of seven members of Limerick Ecology Action who attended the congressional hearings for evacuation plans for the Limerick Nuclear Plant. They were held at Bucks County Community College and chaired by U.S. Rep. Peter Kostmayer. Philadelphia Electric Co. offered no plan. We were told to stay in our homes and go to our cellars.

Harold Denton, director of nuclear regulation for the Nuclear Regulatory Commission, stated that the new proposed rules would require Philadelphia Electric to warn residents within a 10-mile radius of the plant within 15 minutes of a "site emergency." He said that special evacuation preparations must be made for Pennhurst Center, Pottstown Memorial Medical Center, the prison at Graterford and the Montgomery County Geriatric and Rehabilitation Center.

He was also concerned that the area had double the population density that would now be required because of the Three Mile Island accident.

Alan Nogee of Keystone Alliance of Philadelphia stated that 6,000 persons attended a plant site demonstration the previous year. State police in helicopters estimated that onethird of the people headed to the rally were

turned back because of the enormous traffic

The 2000 census shows that Limerick had a 26 percent population growth in the 1980s and a 102 percent growth in the 1990s. The population in the 1990s was 6,691 and 13,534 in the 2000 census.

Will the Nuclear Regulatory Commission require an evacuation plan for the casino?

BETTY GUARDIANI Philadelphia.

The Mercury welcomes letters to the editor concerning topics of general interest.

Letters must be less than 250 words in length, legible and submitted exclusively to The Mercury.

No more than one letter per person will be published per any 30-day period.

For purposes of verification only, include home address and phone number (day and evening).

All letters are subject to editing or rejection based on

content. Letters should be addressed to:

Readers' Views The Mercury 24 N. Hanover Pottstown, PA 19464

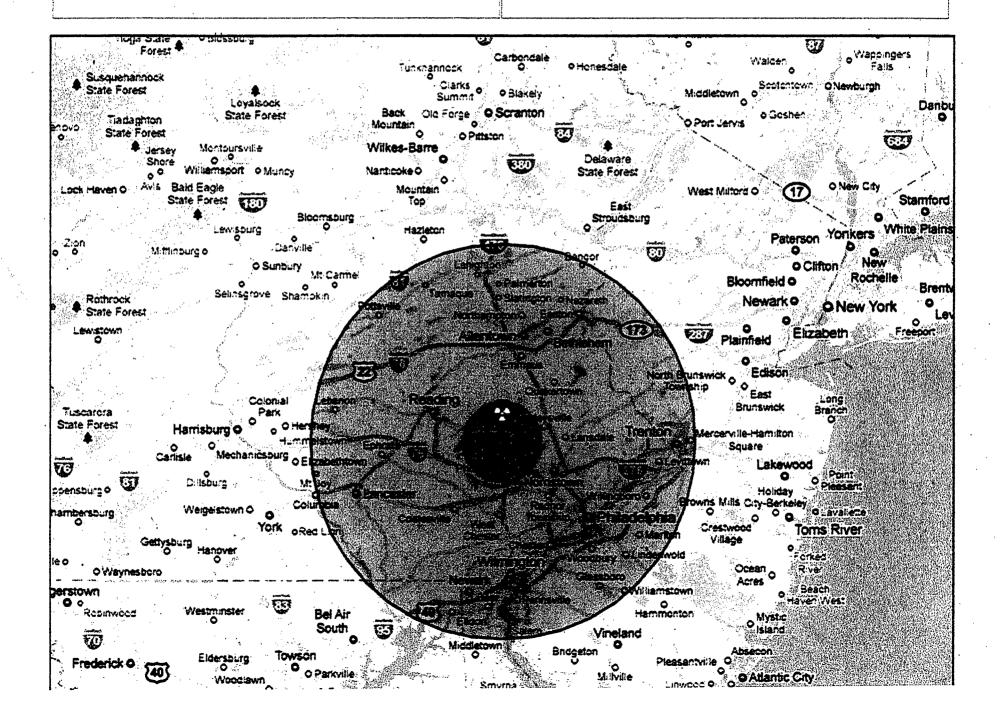
Our e-mail address letters@pottsmerc.com

miles from the nuclear power plant 212 220

7 689 866

persons would have to be evacuated.

persons would have to be evacuated.



Is Pennsylvania ready for a disaster's

As we thaw out from winter's icy grip, it has become apparent how much work needs to be

done to prepare for sudden disasters.

What happened recently on Interstate 78 was the latest example of how ill prepared Pennsylvania is to handle an unannounced emergency. People were stranded for more than 24 hours in sub-freezing temperatures.

How could Pennsylvania have been caught so off guard? Where was the gover-

Guest. columnist

nor? Where was PEMA? Where was the lieutenant governor, who chairs the Pennsylvania Emergency Management Council?

The state has had 28 years to prepare for emergencies since pre-school children and pregnant women were evacuated from the Three Mile Island-area on March 30, 1979. While improvements have been made, these kids remain unaccounted for in the event of another

Katrina, this summer's flooding, and the most recent snow emergency demonstrate that we are ill equipped to evacuate large populations in the event of a radiological emergency.

If we can't get people off a highway for more than 24 hours due to snow and ice, how are we going to evacuate an entire population living in

the 10-mile Emergency Planning Zone around a nuclear power plant?

After 9/11. TMI-Alert reviewed Pennsylvania's emergency plan and found day care centers and nursery schools had been left out even though a 1984 federal law required their inclusion. TMIA filed suit at the NRC.

The author of the 1984 NRC law agreed with TMIA, and filed a formal complaint. This 40year nuclear veteran recommended that the NRC compel the Commonwealth to include preschool children and nursery schoolers in the nuclear emergency plan, or risk losing their

The NRC denied TMIA's request that the NRC enforce its own law. Gov. Rendell, PEMA, and the nuclear industry continue to argue that it is not their responsibility to help these kids get out of harm's way. Playing a nuclear shell game with children is not emergency planning.

ERIC EPSTEIN Chairman, TMI-Alert

Three Mile Island Alert Inc. is a safe-energy organization based in Harrisburg, Pennsylvania and founded in 1977. TMIA monitors Peach Bottom, Susquehanna and Three Mile Island nuclear generating stations.

U.S. said poorly prepared for nuclear threat

By DAVID BRISCOE **Associated Press Writer**

WASHINGTON - The government is ill-prepared to handle an increasing threat of nuclear, chemical or biological attack from rogue states or terrorists, a commission headed by former CIA Director John Deutch concludes.

"We think the threat is much more severe than commonly appreciated by the American people, and government is not well-organized to deal with it." said Deutch in outlining the government commission's conclusions in an interview Thursday. Its report goes to Congress and House next White Wednesday.

The bipartisan Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction recommends appointment of a top-level deputy to the National Security Council who would work from the White House with the president and vice president and all federal agencies.

The appointee, a national crisis director, would coordinate protection against any attack aimed at causing widespread disruption, destruction and death in America, as well as measures for dealing with the crisis should it occur.

Threats analyzed in the report include the potential capabilities of countries such as North Korea, Iraq or Iran regarded by

the United States as "rogue states": the possession of massively lethal weapons by terrorist organizations; the transfer of destructive technology from Russia or China; and instability in the Mideast and on the subcontinent, where both India and Pakistan have tested nuclear bombs.

The report does not rank the dangers to Americans but stresses the possibility of new threats emerging without notice. Deutch said.

He discussed the commission's conclusions after reports on some of its findings in the Baltimore Sun and The Philadelphia Inquirer. Other members of his panel include Sen. Arlen Specter, R-Pa., vice Congress; and top national secu-

rity and diplomacy experts.

Scenarios suggested in the 140page report include a disgruntled Russian scientist selling nuclearweapons fuel to Iran, or anthrax being released in a crowded subway, according to The Sun. Deutch said the report provides details on a variety of possible crises and recommends steps to be taken by federal agencies.

At the State Department, spokesman James Folev declined to comment on the report Thursday, saving officials had not yet seen it.

The proposed presidential appointee would coordinate health, law enforcement, defense and other federal agencies on preparations for any chairman; former members of nuclear, chemical or biological weapons and the federal against it."

response to it.

"A national director ... would make sure all agencies are working together for a common plan to protect the American people from the threat." Deutch said.

"This is merely a call for greater presidential and vice presidential participation in the problem," he said, "and for greater central direction and coordination of the different agency efforts."

Deutch said the nonproliferation challenge has changed significantly in recent years: It is no longer enough just to try to prevent the spread of dangerous weapons because so many governments and groups already have them, he said, adding that incident or attack involving it is now necessary to prepare "to combat it and defend



Questions surround Limerick:

How well will evacuation plan work if terrorist incident occurs?

By JOHN GENTZEL **Mercury Staff Writer**

LIMERICK - When the nuclear plant was constructed in the late 1970s, Limerick was mainly a farming community - a stark contrast from the residential jigsaw puzzle that it is today.

A thoroughfare, like Township Line Road for example, that once was used as a connector road by a small number of residents, is now accessed by thousands on a daily basis, as housing developments and businesses (See EVACUATION on A3)

replace farmlands throughout the area.

Anyone who has driven Township Line Road or Route 422 during normal, non-emergency rush hour situations understands the problems and perils of traffic backups.

So what would happen if the area tried to flee a catastronhe at Exelon Nuclear's Limerick Generating Station all at once?

For starters, there is an emergency plan in place that, if there is a catastrophe, pro-

Pottstown, Pennsylvania 💯



Many new homes and businesses have been built in the Limerick area since the nuclear plant was built in the 1970s.

How well will evacuation plan work if terrorist incident occurs?

(EVACUATION from A1)

vides residents with predetermined evacuation procedures, numbers to call, and things to listen for if the unthinkable were to happen.

However, there are several concerns with the plan.

For example, not many residents know about or have seen it, so if an emergency were to arise, they would be one of many confused individuals who were both unsure of where to go and who to contact to find out what was happening.

A Limerick resident who hears about a catastrophe at the nuclear plant might assume that Route 422 was their prescribed exit out of trouble, but according to the evacuation plan, that's not the case.

Who would think that Limerick's evacuation route was the two lane road Ridge Pike, to Germantown Pike, to the Pennsylvania Turnpike to end up at the Willow Grove Industrial Park?

Or how about residents of Pottstown. Depending on where they live in the borough they could either be headed toward the Boscov Outlet Center off Route 422 in Exeter, the Robeson Township Building off Route 724 in Berks County or Emmaus High School in Emmaus, Lehigh County.

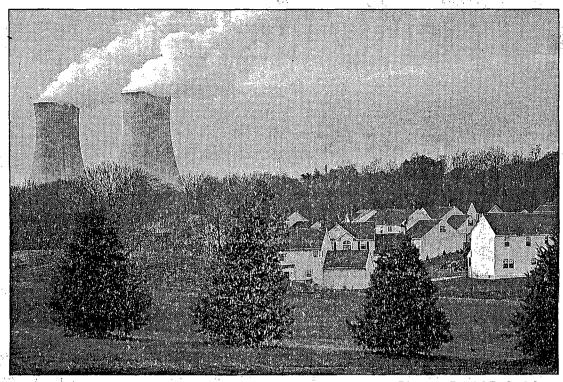
And if the unthinkable happens in the middle of the school day?

Almost certainly, parents will be flooding area schools with calls and questions about their child's well-being.

What Spring-Ford Area School District parent would assume that their children will all be transported to the Plymouth-Whitemarsh High School complex in Plymouth Meeting?

Couple the thousands of vehicles frantically scrambling to escape with an infrastructure that can barely handle normal day-to-day traffic and congestion and there are bound to be problems.

Local infrastructure was expanded in the late 1970s (shoulders were increased, roads impreed) to accommodate a potential mass xodus of traffic, but in the 20 years since, not much has been done to area



Mercury Photo by Daniel P. Creighton

Hundreds of new homes have been built on the farmland surrounding the Limerick nuclear plant in the past two decades.

roadways to reflect years of rapid growth.

Adding to this concern, a Limerick official explained recently, that the evacuation plan relies heavily on local emergency management agencies, which in the township's case, is a volunteer group.

Meaning if there is a mass evacuation, volunteers would be responsible for contacting the elderly or disabled and directing traffic on area roadways.

It's not that volunteers are unable to perform the duties required in the plan, but who's to say that these volunteers will "stick around," as the official explained, and "not high tail it out of here with the rest of the population" in the event of an accident.

For all but the monthinkable accidents, companies like accidents provide local emergency personnel with training and

support, company spokesman Ralph DeSantis explained.

This is done so that if an accident were to occur, and the first unit to the scene was the local volunteer fire company — and not the more experienced and better trained county, state or federal agencies — they would have the tools necessary to handle the situation.

If something does happen that the community needs to know about, a system of sirens — the Emergency Alert System — will sound, alerting residents to tune into local news sources for information. Many hear the practice sounds of the EAS the first Monday of each month at 2 p.m.

Copies of the emergency evacuation plan can be picked up at area municipal buildings.

John Gentzel's e-mail address is igentzel@pottsmerc.com

<u>Limerick Nuclear Plant</u>

And

FINANCIAL INJUSTICE

The Public's Costs Are Astronomical

The Public's Long-Term Financial Costs
Must Be Considered
In NRC'S Relicensing Decisions
For Limerick Nuclear Plant.

SEE ATTACHED FINANCIAL FACTS!

FINANCIAL DECEPTION

OUR REGION'S RESIDENTS GET THE HARMS AND COSTS WHILE EXELON GETS ASTRONOMICAL FINANCIAL BENEFITS

IF NRC IS WEIGHING HARMS AGAINST BENEFITS IN LIMERICK NUCLEAR PLANT RELICENSING ALL PUBLIC COSTS NEED TO BE EVALUATED AND INCLUDED IN HARMS

> EVIDENCE SHOWS PECO/EXELON FINANCIALLY VICTIMIZED OUR REGION'S RESIDENTS BOTH AS RATEPAYERS AND TAXPAYERS TO OPERATE LIMERICK NUCLEAR PLANT.

EXELON OWES OUR REGION FAR MORE THAN THEY DONATE!

> PECO/EXELON MADE BILLIONS AT OUR EXPENSE

WE PAID THE LION'S SHARE FOR LIMERICK CONSTRUCTION WHILE PECO/EXELON REAPED HUGE PROFITS

HIDDEN COSTS IN OUR ELECTRIC BILLS

- ✓ CONSTRUCTION COSTS

 RATEPAYERS PAID THE LION'S SHARE IN ELECTRIC BILLS

 From 1985 to 2010 For Limerick's \$6.84 Billion Construction Costs
- ✓ DECOMMISSIONING COSTS ARE STILL HIDDEN IN OUR MONTHLY FLECTRIC BILLS

PECO/EXELON - COSTLY LIES AND DECEPTIONS

1. "TOO CHEAP TO METER"

Before Limerick was licensed, this region was told that by accepting Limerick Nuclear Plant and its risks, this region's electric would be too cheap to meter. Limerick started operating in 1985.

Instead of too cheap to meter,

By 1997, OUR ELECTRIC RATES SKYROCKETED to 55% HIGHER THAN THE NATIONALAVERAGE Mercury 9/28/97 by Erik Engquist

Limerick Construction Costs

1960s Original Estimate - \$ 326 Million Rising to \$375 Million

Final Construction Costs \$6.84 Billion (Reported 1999 Mercury)

20 Times Higher Than Original \$326 Million Estimate

2. FAIR SHARE OF TAXES WERE NEVER PAID FOR LIMERICK PECO/EXELON SHIFTED MORE THAN \$300 MILLION ON TO THE BACKS OF LOCAL TAXPAYERS OVER THE PAST 25 YEARS.

- Exelon Failed To Pay \$14 Million A Year (2002 to 2011), And PAID ZERO From 1985 to 2002.
- ZERO Property Taxes Were Paid For Limerick From 1985 to the early 2000s.
 In 1999 PECO Actually Claimed Limerick Nuclear Plant Property Was Worth \$0
- Then Through A Court Settlement, Exelon Started Paying, \$3 Million A Year NOT The \$17 Million Original Estimate

PECO/EXELON CONTRIBUTIONS OVER THE PAST 25 YEARS HAVE BEEN PALTRY BY COMPARISON.

- 3. TAXPAYERS COVER THE LION'S SHARE OF LIMERICK'S INSURANCE LIABILITY THROUGH THE PRICE ANDERSON ACT.
- 4. <u>TAXPAYERS/RATEPAYERS PAY ASTRONOMICAL COSTS FOR LIMERICK'S</u> DEADLY RADIOACTIVE WASTES.
- 5. THE NUCLEAR INDUSTRY SUED TAXPAYERS (DOE) OVER YUCCA MOUNTAIN NOT OPENING.
 - ✓ Exelon Received \$300 Million Until 2010 \$600 Million After
 - ✓ We Are Paying Exelon To Store Their Own Deadly Wastes On Site.
- 6. EXELON TRIED TO GET OUR PA STATE LEGISLATURE TO PAY \$500 MILLION (BORROWED MONEY) TO HELP PAY FOR THEIR UPRATES TO RUN LIMERICK HARDER.
- 7. WE PAY FOR EXTRAORDINARY ENVIRONMENTAL DAMAGE AND HEALTH HARMS

What Are The Public's Costs?

Past, Present, Future

Over 26 Years? 40 Years? 60 Years?

For Costly Health and Environmental Damage From Limerick Nuclear Plant? Included:

1. Radioactive Air Releases

Plus: Particulate Matter (PM-10) Air Emissions From Cooling Towers 8 Times Higher Than Originally Permitted - Causing increased hospitalizations and emergency room visits Plus: NOx, SO2, VOCs, Arsenic, Cadmium, Chromium, Lead, PCBs, Halogens

2. Radioactive Discharges (24/7) Into Public Drinking Water For Almost 2 Million People.

Plus: Total Dissolved Solids (TDS) at 4 Times Safe Drinking Water Standards
Plus: A dangerous toxic soup that ends up in waste water from 92,000 to 194,000
pounds of hazardous chemicals used at Limerick every day.

- 3. Schuylkill River Depletion Concentrating Toxics Increasing Costs For Water Treatment Systems and Their Customers and Higher Heath Care Costs For Many
- 4. Rising Schuylkill River Temperatures

 Damage to Ecosystems and Loss of Fish and Wildlife
- 5. Contaminated Unfiltered Mine Water Pumping For Limerick Adding Harms to River, Health, and Costs for Public Water
- 6. Radioactive Groundwater and Well Contamination
 Diminished Property Values, Health Care, Water Filtration
- 7. Ever-Growing DeFacto High-Level Radioactive Waste Dump For Which Exelon Expects The Public To Pay to Maintain Forever
- 8. Liability Hundreds of Billions (Just 1 Reactor) Accident / Attack
- 9. Loss of Property Use and Possessions with NO Insurance Coverage From Accident or Attack on Reactors & Wastes

How Much Do Environmental Diseases and Disabilities Cost?

Economic Costs

Of Diseases and Disabilities Attributable To

Environmental Contaminants

Conservative Estimate Nation Wide Up To

\$165 Billion

Study Prepared In 2003 - By Washington State Researchers www.nwcphp.org/nph

Costs

Of Preventable Childhood Illnesses

'The Price We Pay For Pollution"

2003 Report By Rachel Massey and Frank Ackerman

Tufts University Medford MA http://ase.tufts.edu/gdae

Science & Environmental Health Network Ethical Economics

True Cost Clearinghouse

http://www.wehn.org/tcc.html

True Cost Estimate Examples

- ADHD Costly for Adults Costs for Children
- Air Pollution Costs to Crops
- Air Pollution Emissions Trading Flawed
- Childhood Environmental Illness
- Cost of Preventable Childhood Illness
- Chronic Disease Costs Drive Health Costs
- Clean Air Act Benefits & Costs
- Environmental Disease Burden and Costs WHO
- Healthcare Cost Projections and Social Determinants
- Healthcare Economic Incentive Lacking For Prevention
- Liability Wastes / Toxic Chemicals
- Liability Underreporting Environmental Risk Is Costly
- Liability 'Lost-Use' Damages
- Mercury and Children's Brains
- Ecosystem Assessments
- Clean-Up Costs
- Cost Effective Pollution Prevention
- Property Value Benefits of Clean-up
- Regulation Benefits & Costs
- Greening Costs and Benefits of Schools Toxic Chemicals Cost More
- Future Costs of Safe Water
- Workplace Exposure Costs to Children

OBVIOUSLY ASTRONOMICAL FROM OUR LIST ABOVE BUT NOT INCLUDED NUCLEAR POWER COSTS

ACE Believes Our Written Testimony, Along With Common Sense, Make It Clear That:

Closing Limerick Nuclear Plant Will Prevent The Costs For Unnecessary Diseases and Disabilities, Especially In Children.

- ➤ ACE is urging NRC to do a sample evaluation of costs for our documented cancers (above the national average) in the six communities near Limerick Nuclear Plant, from after Limerick started to operate to the late 1990s. We already provided documented PA Cancer Registry and CDC data that can be used to limit NRC cost and time.
- ➤ Specifically, we ask that cancers linked to radiation exposure be included: Childhood cancer, thyroid cancer, breast cancer, and leukemia. We believe those costs, for just several cancers, for just that 15 year period, will outweigh all Limerick's inflated donations and underpaid taxes. This should be a defense in closing Limerick Nuclear Plant.
 - Tracking we obtained for just one child diagnosed with cancer at 6 months and tracked until two years was well over \$2.2 million dollars. Childhood cancer rates rose to 92.5% above the national average by 1999.
- ➢ If unnecessary cancer costs are not sufficient, we also ask that state data, reported by EPA in 2003, be used to calculate the costs for all cases above the state average for infant and neonatal mortality, malignant tumors, cerebrovascular disease and respiratory disease.
 - ACE evidence in these public hearing comments for Limerick's Updated EIS should tell anyone that Limerick's extraordinary pollution threats, including radiation and other toxics, are a major factor in cancer and other illnesses above state and national averages.

RELICENSING MEANS EXELON MAKES BILLIONS MORE BUT WHAT WOULD THAT COST THE PUBLIC?

EPA's table could be used as a guide for estimates:

Many of the toxics continuously emitted and discharged from Limerick are associated with a broad range of diseases and disabilities.

COSTS: Table of Contents

U.S. EPA Cost of Illness Handbook

http://www.epa.gov/oppt/coi/toc.html

Cancers after decades of LIMERICK NUCLEAR PLANT'S ROUTINE

RADIATION RELEASES. What Are The Extraordinary Health Care Costs For The Shocking Numbers Of Cancers Above The National Average After Limerick Started Operating?

ADVERSE DEVELOPMENTAL EFFECTS

- Low Birth Weight
- Cleft Lip and Palate
- Limb Reductions
- Cardiac Abnormalities
- Spina Bifida
- Cerebral Palsy
- Down Syndrome
- Reducing High Blood Levels In Children

RESPIRATORY ILLNESSES COSTS

- Asthma
- Acute Respiratory Diseases
- Hypersensitivity Pneumonitis
- Humidifier Fever
- Legionnaires Disease
- Middle Ear Infections

What Is The Cost Of Childhood Cancer?

For One Child Diagnosed With Cancer At 6 Months Old

To Date - Reported to ACE in 2009 - Modestly Calculated and On-Going

Over \$2,200,000.00

Types of Costs Incurred and Listed In Parents' Calculation

- Bone Scans Nuclear Medicine put in port for IV scans Iodine Blocker and Radioactive Iodine (4-Day Procedure)
- Surgeries Byopsy for port inside body
- Chemotherapy Cycle 1-2-3-4
- Bone Marrow Aspirations 12" needle into spine to check for cancer cells in bone marrow
- Anesthesia for surgeries and scans and bone marrow aspirations, etc.
- Cat Scans MRI Scans
- Medicines in Hospital and Out
- Medicines for Surgeries and Port-- and Scans
- Bills for surgery and Surgeon
- Doctor visits
- Hospital Stays For: Chemo Fever Sickness Surgeries Etc.
- Surgery to remove tumor and Surgeon bill
- Doctor visits- and medicines there on etc., still seeing Doctor every 6 months
- Labs --billing for this throughout diagnoses and still on going

What we have seen in this community related to childhood cancers.

- Parents lost jobs as a result of missing too much work from trips to Children's Hospital and Doctor's offices.
- Phone and electric services were removed as a result of not having enough money to pay bills
- Loss of their homes
- Parent Separations and Divorces
- Children not being able to attend school or even graduate because they can't be in school enough from compromised immune systems and fear of getting sick from germs.
- Paying for and losing tuition for a child who had a relapse

Closing Limerick Would Prevent Costs and Suffering Of Cancer And Other Illnesses In Our Region.

NRC's Prevention Of Carcinogens Pumped Into Our Air And Water From Limerick Nuclear Plant Could Minimize Costs And Suffering.

What Are The Costs Of Cancer Studies?

THIS MONEY WOULD BE BETTER SPENT STOPPING THE POLLUTION CAUSING CANCER AND CLEANING IT UP.

CANCER STUDIES HAVE COST MILLIONS

NO CANCER STUDY HAS EVER LED TO PREVENTION!

- 1. No cancer study has led to clean-up or prevention of pollution causing the cancers.
- 2. We keep wasting time and money Counting Cancer Victims, then comparing them to other polluted populations.
- > WE PREDICT NRC'S CANCER STUDY WILL NOT LEAD TO PREVENTION OF RADIATION RELEASES FROM NUCLEAR PLANTS OR CLEAN UP.
- 3. COSTLY Cancer and other Health Studies are inconclusive by design to avoid preventive action by polluters, government officials, and agencies.
- 4. Polluters use inconclusive studies to avoid the costs of pollution control equipment or clean-up.
- > WE PREDICT NRC'S CANCER STUDY WILL BE USED BY THE NUCLEAR INDUSTRY TO DEFEND RELICENSING AND BUILDING NEW NUCLEAR PLANTS AND TO AVOID COSTS OF PREVENTING THREATS.
- A local doctor said its time we stop wasting money on studies and follow the lead of European countries like Sweden that decided to follow the Precautionary Principle and avoid those things that cause cancer and other illnesses.
- > WE PREDICT THAT MONEY BEING SPENT ON ANOTHER STUDY
 AROUND NUCLEAR PLANTS WILL LEAD TO MORE POLLUTION AND
 MORE CANCER ACROSS OUR NATION.

Rates 55% above U.S. average

9-30-97 By ERIK ENGQUIST **Mercury Staff Writer**

The future of electricity seemed bright to young John Coine in the early '60s, when his class at the former Phoenixville Memorial Junior High School heard rosy predictions about nuclear power.

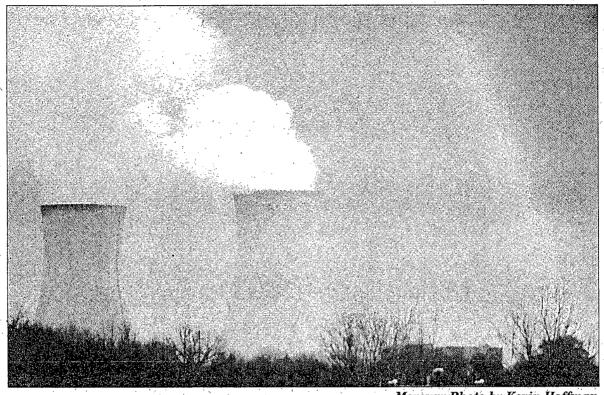
"I remember people from the Franklin Institute coming and telling us we would never have an electric meter," Coine recalls. "We would just pay a couple bucks a month, because we were going to have all these plants built.

Today, PECO customers get a monthly reminder of the failure of that promise: their electric bill.

Forty years and many billions of dollars ago, PECO Energy began its pursuit of electricity "too cheap to meter." That phrase, coined by Atomic Energy Commission Chairman Lewis Strauss in 1954, haunts PECO to this day.

In 1975, the typical residential PECO customer paid \$25.05 per month for electricity. In 1992, the same customer was paying \$76.07, a 204-percent increase (outstripping inflation by 67 points). Although that number has since dropped to \$70.35, PECO's residential rates still exceed the state average by 35 percent and the national average by 55 percent.

Go back far enough, to 1968,



Mercury Photo by Kevin Hoffman

PECO found the proverbial pot of gold at the end of the rainbow when it negotiated for \$5.461 billion in stranded costs, which will be passed on to the utility's customers, ensuring little rate relief for the next decade.

and PECO's rates equaled the national average, at 2.3 cents per kilowatt-hour. PECO hit the 13-cent mark in 1995, up 465 percent, while the nation's rose to just 8.4 cents, or 265 percent. Inflation climbed 288 percent over that time.

No matter how you splice it. PECO's electric rates have surged. Are nuclear plants to blame? Among Pennsylvania's eight utilities, PECO relies the most on nuclear power and has the highest rates. West Penn Power has no nuclear plants

and the lowest rates. In 1995, PECO charged residents 88 percent more than West Penn Power.

"Why are the electric bills high? Because of Limerick's

(See RATES on A7)

torceu many a minerick Generating Station advocate to eat his words, including former PECO Vice President Vincent S. Boyer, who assured in 1971, "None of (Limerick's waste) will be disposed of at the plant site."

Twenty-six years later, the high-level radioactive waste is stored at Limerick and more than 75 other nuclear plants nationwide, although ratepayers have so far given the federal government \$13 billion to put it somewhere else. Pennsylvanians alone have paid more than \$500 million.

"The government has reneged on its obligation to take the fuel, because it listens to all these intervener groups," Bover says today. "The politicians are all worried about votes."

Indeed, elected officials tend to oppose waste repositories in their areas. "Waste disposal is a social and political problem, not a technical one," Boyer insists.

Environmental activists disagree, noting how long nuclear fuel remains radioactive. "Whatever you've got to do with it, you've got to keep doing it for 10,000 years," says Pottstown resident and longtime Limerick opponent Jim Gaut. "No government has ever lasted that long. No civilization has ever lasted that long. It's such bare-faced arrogance to start off doing something when you simply aren't going to last long enough to take care of it."

PECO doesn't share Gaut's concern. PECO Vice President Walt MacFarland says,

INSDA Nuclear enclevings almout of steam

he Pennsylvania area.



















PECO: Limerick plant worth \$0

By ERIK SCHWARTZ Mercury Staff Writer 7/31/99

LIMERICK — Built at a cost of \$6.8 billion, the Limerick Generating Station is now worthless.

That's according to owner PECO Energy Co.'s tax appeal, filed Thursday with the Montgomery County Board of Assessment Appeals.

"We're basically saying that, given the plant's value in a deregulated environment and the cost of decommissioning, that puts it at a value of zero, for tax purposes," said company spokesman Bill Jones.

Currently, the county assesses the nuclear power plant at \$939.4 million, though local taxing authorities currently receive no property taxes paid by PECO directly.

PECO: Limerick plant worth: \$0

(PECO from A1)

Bottom Atomic Power Station, which it co-owns, suggesting a fair market value of \$10 million, he said.

Even at \$10 million, West is skeptical. Limerick would get about \$78,000 in property taxes from PECO, "not substantially more than we're getting now."

"For years, Limerick has gotten very little from that facility," he said. "As a result, some businesses don't want to come to Limerick because of the power plant and the connotation of having the same address. It's also retarded our ability to attract higher-end homes. Some nilders of \$300,000 houses on't want to come."

'We didn't think it would be this ridiculous. This is like fantasy-land.'

John S. Grispon, 8-F school board president

Under a system used to distribute realestate taxes from all public utilities statewide, Limerick Township received about \$15,000 in 1998; the county, \$1.3 million; and Spring-Ford, \$343,000.

PECO and other deregulated electricitygenerators in Pennsylvania had until Friday to file appeals of their property-tax assessments. If the appeals board agrees with the company, Limerick Township, the county

Beginning in January, PECO will be liable for local real-estate taxes on "land and improvements indispensable to the generation of electricity," according to the amended Public Utility Realty Tax Act.

So based on present rates and the current assessment, PECO would pay taxes on the Limerick facility estimated at \$732,000 to the township, \$1.95 million to the county, and \$13.3 million to the school district.

But PECO maintains that its reactors, turbines, turbine buildings and cooling towers are "equipment" not subject to property taxes, Jones said. Only offices and warehouses at the plant would be taxable, he said.

Jones said the company's assessment appeal is also based on the \$23 million it paid for Three Mile Island Up 1 near Harrisburg, the full ioning twin to the site of the nation's worst nuclear disaster.

and the Spring-Ford Area School District stand to see their revenues decrease from levels that some people viewed as paltry in the first place.

"Zero sounds a little low," said Limerick Supervisors Chairman Mark D. West.

"We figured they'd appeal. We didn't think it would be this ridiculous," said Spring-Ford School Board President John S. Grispon. "This is like fantasy-land. We're supposed to suspend belief. I guess the electricity should be free."

PECO attached a letter to its appeal, suggesting a "fair market value" of \$10 million. "We are willing to negotiate that figure with local taxing authorities," Jones said. The company filed a similar appeal in York County, valuing at nothing the Peach

(See PECO on A3)

The purchase, made with its partner British Energy P.L.C., includes a \$320 million decommissioning fund that is expected to grow to \$450 million by the time it's needed.

Subtracting the market value of the Limerick plant — whatever it might be — by its decommissioning cost would give a negative number, Jones said, so the company determined it was valueless, "for tax purposes."

The Limerick nuclear units, licensed until 2024 and 2029, will be shut down "so far in the future that we haven't even calculated" the cost, he said.

Grispon said Spring-Ford's attorneys, as with any other real-estate assessment appeal, would work in the district taxpayers' interests.

"They might follow this one a little more closely," he said.

Opinion

EDITORIALS

Thorns to PECO for arguing plant worth is zero

THORNS to PECO Energy Co. for taking up the Montgomery County Board of Assessment's time arguing that the Limerick Nuclear Generating Plant has a property value of zero. Why should homeowners pay property taxes while a utility company that makes the money PECO makes get away with nothing? The utility giant's argument that the property will have a negative value when they have to decommission the plant is absurd that's like saying a golf course owner doesn't have to pay taxes because someday people may not play golf anymore! Shame on them for this ridiculous assessment appeal.

THORNS to PECO for appealing - before the ink was even dry - the decision of the Montgomery County Board of Assessment Appeals denying PECO's request to assess the Limerick Nuclear Power Plant at zero. The assessment appeals board lowered PECO's assessment on the power plant from \$939.4 million to \$912.5 million, but didn't buy PECO's argument that the plant is worth nothing. for taxing purposes because it will have a negative value when it faces decommissioning in the future. PECO spokesman Bill Jones said the utility company expected the denial and was prepared to file the appeal immediately. Jones said PECO is willing to concede to a \$10 million assessment, but that's light years away from the county's position. We suggest PECO puts its time, money and energy into negotiating an assessment that both

 sides can live with instead of battling this out in court at taxpayer and customer expense.

Nuclear Power's Astronomical Costs To Taxpayers

Nuclear power couldn't exist without massive taxpayer giveaways.

It's not just AIG and Wall Street jeopardizing your financial future.

> Taxpayers and ratepayers have long been victimized by the nuclear industry, their lobbyists, and some elected officials who take their contributions.

Nuclear power's costs to taxpayers are astronomical. The nuclear industry is reaping enormous profits at your expense. Wall Street rejects the nuclear gamble, so costs for new nuclear power plants and their deadly wastes will continue to come from the wallets of ordinary Americans.

Nuclear industry lobbyists and oblivious supporters are perpetrating an unconscionable scam on taxpayers. Billions of your tax dollars are being used for building nuclear plants, long-term high-level radioactive waste storage, liability, and more. We can't afford more nuclear power. For example:

- 1. **Federal loan guarantees** would be required for \$8 Billion of an estimated \$10 Billion for the proposed PA new nuclear reactor along the Susquehanna. Actual costs could be far higher. That energy wouldn't even be available until 2016, at the earliest.
- 2. Paid by taxpayers and ratepayers The astronomical costs for dealing with the nuclear industry's massive amounts of high-level radioactive wastes that remain deadly for hundreds of thousands of years. \$100 Billion estimated for Yucca Mountain just for 150 years \$70 Billion Taxpayers, \$30 Billion Ratepayer Fund. EPA set a million-year health standard. How much will it cost future generations to deal with the nuclear industry's ever growing piles of deadly wastes?
- 3. The Price Anderson Act absolved the nuclear industry from major **liability** costs for accidents or terrorists attacks. In 2004 dollars, the calculated cost for just one reactor accident or attack at Limerick would be \$417 Billion. The nuclear industry pays only about \$10 Billion of that.
- 4. **Health costs** related to routine and accidental radiation emissions into the air, water, and soil around nuclear plants are unmeasurable, but overwhelming.
 - For cancer increases since Limerick Nuclear Power Plant went on line www.acereport.org
 - For powerful connections read "Radioactive Baby Teeth: The Cancer Link" by Joseph Mangano, Radiation and Public Health Project. Or visit www.radiation.org
- 5. **Environmental damage** is too costly to calculate. Limerick Nuclear Power Plant provides examples. What are long-term future costs to taxpayers and residents around nuclear plants for:
 - Insatiable water needs running the Schuylkill River dry
 - Massive radioactive wastewater discharges (5 billion gallons each year) poisoning the river
 - Heated wastewater discharges damaging ecosystems
 - Contamination of the river with massive amounts of unfiltered toxic mine water to supplement the flow for Limerick Nuclear Plant
 - Radiation emissions routinely and accidentally poisoning our air, water, soil, food, and bodies
 - Limerick Nuclear Plant's major air pollution under the Clean Air Act Permit includes: NOx, PM10, VOCs, SO2, Arsenic, Cadmium, Chromium, Lead, PCBs, Halogens

Nuclear spin groups like the PA Energy Alliance along with some elected officials and media are still absurdly claiming nuclear power is clean, reliable, and necessary to solve the energy crisis. None of that is true. In fact, nuclear power can be less reliable. It was shown in Europe and the South, in a heat wave and drought nuclear power can be less reliable due to its insatiable water needs.

Some in Congress keep trying to get \$50 billion more in federal loan guarantees for dirty, dangerous nuclear power. Why? Could it be campaign contributions / donations from Exelon and others? www.opensecrets.org

The fact is:

We don't need dangerous, polluting, and costly nuclear power jeopardizing our future.

- > DOE reported that wind and solar power can provide far more energy than our nation needs.
- > Both solar and wind are far cleaner, safer, and faster paths to energy independence and far less costly to taxpayers.

For reliable information on nuclear power issues: www.beyondnuclear.org. www.nirs.org

The ACE Board Of Directors

Opinion

Nuclear energy relies on taxpayer subsidies

Published: Wednesday, May 27, 2009

It's not just AIG and Wall Street jeopardizing your financial future. Taxpayers and ratepayers have long been victimized by the nuclear industry, their lobbyists, and some elected officials who take their contributions. Nuclear power couldn't exist without massive taxpayer giveaways.

The nuclear industry is reaping enormous profits at your expense. Nuclear power's costs to taxpayers are astronomical. Wall Street rejects the nuclear gamble, so costs for new nuclear power plants and their deadly wastes will continue to come from the wallets of ordinary Americans.

Nuclear industry lobbyists and oblivious supporters are perpetrating an unconscionable scam on taxpayers.

Billions of your tax dollars are being used for building nuclear plants, long-term high-level radioactive waste storage, liability, and more. We can't afford more nuclear power. For example:

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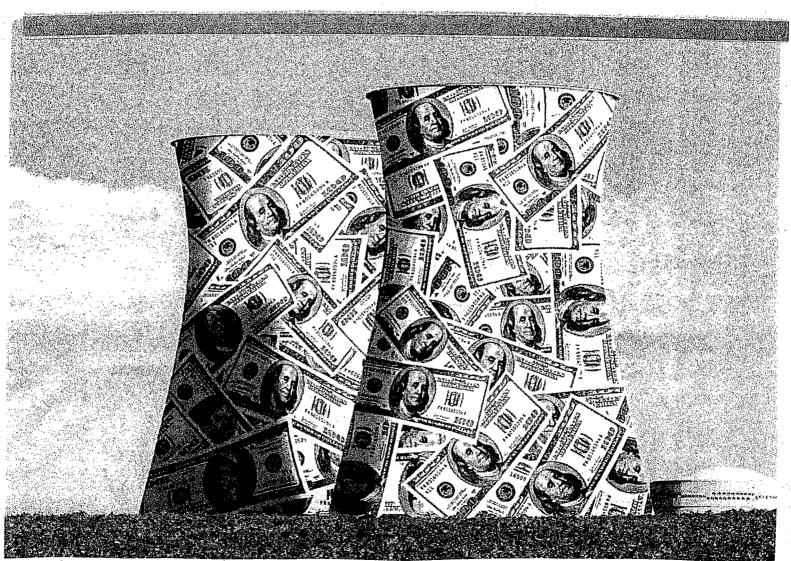
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PECO Sky-High Electric



Limerick Nuclear Plant - A Major Factor

"PECO Rates 55% Above U.S. Average"

In 1997, the Mercury reported that PECO relies mostly on nuclear power and had the highest electric rates.

People from the Franklin Institute said we would never have an electric meter and would just pay a couple bucks a month because we were going to have Limerick.

PECO Customers get a Monthly Reminder of the FAILURE of that promise - Their Electric Bill

1997 article said; Forty years and many billions of dollars ago, PECO began its pursuit of electricity,

"TOO CHEAP TO METER".

That phrase Haunts PECO to this day.
It was coined by Atomic Energy Commission Chairman, Lewis Strauss in 1954.

In 1975 (before Limerick) typical residential PECO electric customers paid \$25.05 per month.

> By <u>1992, (after Limerick)</u> that same customer paid \$76.07 per month.

A 204% INCREASE - Outstripping inflation by 67 points.

By 1997, PECO's Residential Rates

> EXCEEDED National Average by 55% - State Average by 35%

In 1968, PECO's rates EQUALED the National Average (before Limerick - 2.3 cents per kilowatt-hour).

After Limerick in 1995

- ✓ PECO rate went UP 465 % (13-cent per kilowatt-hour)
- ✓ National Average UP 265 % (8.4 cents per kilowatt-hour)

From "History Lessons Never Learned" - Mercury by Erik Engquist 9-29-97

> PECO Customers' Bills INCREASED by 204% between 1975 and 1992.

PottsMerc Com

Friday, October 2, 2009

GOLD J -203.00

Recession erodes nuclear plant's 'decommissioning fund'

By Evan Brandt

ebrandt@pottsmerc.com

LIMERICK - A recession moves in mysterious ways.

People who are nervously watching Wall Street's numbers these days might not initially think about what it costs to decommission a nuclear reactor, but the fact of the matter is, it matters.

On Sept. 25, the U.S. Nuclear Regulatory Commission issued a letter to Charles G. Pardee, the president and chief nuclear officer for Exelon Nuclear, the division of Chicago-based electric utility Exelon Corp. that owns and operates the Limerick Nuclear Generating Station.

In the letter, the NRC noted that the "decommissioning fund" for Unit One, the older of Limerick's two generators, had fallen below the level required by NRC regulations.

The rules are in place to assure that the owners of a nuclear power plant have enough money on hand to safely put an old nuclear reactor out of service when the time comes.

Limerick Generation Station spokesman Joseph Szafran said, like retirement funds and hedge funds, Unit One's decommissioning fund suffered losses in the Unit Two in January 1990. stock market decline.

However, he said the fund is expected to recover as the economy recovers, an explanation that has satisfied NRC regulators, according to the Sept. 25 NRC letter.

number is a snapshot and does not represent a long-term trend," Szafran said.

He noted that Limerick Unit One has a 40-year license which expires in 2024. He added that in April. Exelon announced its intention to seek an additional 20 years on its license, thus extending its operation until 2044.

According to the Exelon Web site. Unit One came on line in February 1986 and

An April 29 letter from Exelon Vice President Michael P. Gallagher informed the NRC that the Limerick renewal application will be submitted in September 2011.

"So we're talking about a 60-year lifes-

"You have to remember that this pan overall" for the fund to generate sufficient funds to cover the costs of decommissioning. Szafran explained.

He said the market has already improved since the fund's amounts we submitted to the NRC in March.

The NRC letter noted that the staff there "has considered the length of time remaining on the license as well as the ability of the licensee to obtain needed adjustments from the" Pennsylvania Public Utility Commission.

However, Szafran said Exelon has no plans to ask for an electricity rate increase to replenish the decommissioning fund, but rather expects market gains to accomplish that without any need to seek a rate increase.

Exelon seeks to cut costs in planning for emergencies

By GEORGE STRAWLEY Associated Press Writer

HARRISBURG - The nation's largest operator of nuclear plants wants to cut emergency planning staff at its three Pennsylvania stations, including one in Limerick, and move an operations center for the Three Mile Island plant in order to save money.

Exelon Corp. has proposed . cutting 23 of the 53 planning positions for its Three Mile Island, Limerick and Peach Bottom generating stations.

The Chicago-based company formed by the merger of Philadelphia's PECO Energy and Chicago's Commonwealth Edison is also asking the federal Nuclear Regulatory Commission for permission to move its emergency operations facility for Three Mile Island about 57 miles east from Harrisburg to Coatesville and increase the response time for certain personnel to be in place at the center in an emergency.

Emergency operations facilities are located at least 10 miles away from a plant and serve as headquarters for decision-makers in the event of an accident. They were established at the urging of a presidential commission that investigated the nation's worst commercial nuclear accident, which took place at Three Mile Island in March 1979.

Coatesville, which is near Exelon's mid-Atlantic headquarters, is the site of a combined operations center that serves the Peach Bottom and Limerick plants.

Three Mile Island is located near Middletown, about 10 miles south of Harrisburg. Peach Bottom is located just north of the Maryland state line, about 58 miles west of Philadelphia, and Limerick is 21 miles northwest of Philadelphia.

A spokesman for the Nuclear Regulatory Commission, which will decide on the request, called the changes "significant." Of special concern was the proposal to lengthen the response time for emergency center personnel from 30 minutes to 60 minutes, NRC spokesman Neil A. Sheehan said.

Exelon has already consolidated its emergency-response operations for plants in the Midwest, reflecting a trend within the nuclear industry, Sheehan said.

A representative of a watchdog group that monitors Three Mile Island said the proposal demonstrates the worst aspect of deregulation.

"In the event of an emergency, you would like to be able to plan the response from a location that has the same area code," said Eric Epstein, president of TMI Alert. "Right now, we have a state-of-the-art planning facility outside the 10-mile zone. It's well-equipped to handle a dedicated emergency at TMI.

At Three Mile Island, the company was considering eliminating 11 positions, with six each to be cut within the Peach Bottom and Limerick teams.

The combined cuts included three specialists who can calculate dosages of radiation exposure and five workers who would check for radiation releases outside the plant, as well as personnel responsible for administration, maintenance, security and public relations.

Company officials said the consolidation would improve training and standardize opera-

tions at the three plants.

Exelon presented its plan to the NRC during a May 16 meeting and expects to submit a formal proposal by the end of the

Pennsylvania officials found some ideas in the plan to be good ones but have not passed final judgment on the proposal, said Marko Bourne, a spokesman for the Pennsylvania Emergency. Management Agency.

We have some questions and some technology concerns that we want to address," Bourne

John Hanger, a former Pennsylvania utility regulator who now heads an environmental and consumer advocacy group, said Exelon should have a heavy burden to prove that the consolidation will not reduce safety.

"I'm personally skeptical that Exelon could meet that burden," Hanger said. "The investments in safety shouldn't be cut, especially this significantly, without the highest levels of proof that there is no impact."

Exelon's Inaccurate Claims About Limerick License Renewal

Exelon's Claims Downloaded From Exelon's Website 12-18-10

Exelon's License Renewal Claims Are NOT Accurate, NOT Credible

1. "Clean Energy Source" - NOT TRUE

Exelon falsely claims Limerick is a "Clean Energy Source"

- ✓ Nuclear power is one of the dirtiest, most dangerous energy sources
- ✓ Limerick is a Major Air Polluter under the Clean Air Act
- √ 24 hours a day, 365 days a year, Limerick poisons the Schuylkill River with radioactive wastewater that is also loaded with other toxics
- ✓ Limerick has contaminated groundwater with radiation
- ✓ Radiation was detected in vegetation, fish, river sediment, soil, milk, and baby teeth.
- ✓ Exelon falsely claims to produce electricity "without producing greenhouse gas emissions"
 - Limerick Nuclear Plant continuously emits tons of PM-10 (a greenhouse gas).
 from two cooling towers and other sources
 - Limerick also uses boilers and generators that emit other greenhouse gases

2. "Safe Energy Source" - NOT TRUE

Exelon absurdly claims Limerick is a "Safe Energy Source"

- ✓ Nuclear power is the most dangerous of all energy sources
- ✓ Exelon cannot ensure or guarantee safety

Exelon claims they invest in equipment and people to ensure safe plant operations

- ✓ In fact, Exelon has refused to implement the most stringent fire safety regulations
- ✓ Exelon refuses to guard the nuclear plant against a 9/11 type terrorist attack
- Exelon's commitment to meet safety standards is deceptive and meaningless. NRC has a long history of weakening standards when nuclear plants cannot or will not comply with existing standards.

3. "Reliable Energy Source" - NOT TRUE

Exelon inaccurately claims to be an "Always-On Source" of electricity

- ✓ Nuclear plants are always on except when they are not
- ✓ Exelon is making a claim Limerick cannot live up to. Exelon cannot guarantee Limerick will be on 100% of the time for many reasons. Among them extreme heat and drought, and natural disasters like increasing tornadoes and earthquakes. Limerick is 3rd on the earthquake risk list. It could happen.
- ✓ Limerick has had increasing unplanned shut-downs in recent years.
- ✓ During major floods or storms, thousands of people lose power, some for hours many for days

NUCLEAR POWER IS <u>NOT</u> AN "ALWAYS-ON SOURCE" OF ELECTRIC

Exelon's Website Inaccurately Claims It's Always On

ACTUALLY - NUCLEAR POWER IS ALWAYS ON - "EXCEPT WHEN IT'S NOT".

Shut-downs have been caused by earthquakes, tornadoes, floods, fire, ice, cracking concrete, and even a raccoon. Many reactors have been shut-down in the U.S. and Europe, due to heat and/or drought. Shut-downs can last for days or weeks.

Three Unplanned Shutdowns At Limerick Occurred This Past June In One Week At Limerick Nuclear Plant

Some Lengthy Shut-Downs Occurred This Year. Below Are Examples From A Long List Proving Nuclear Power Is NOT Always On.

- 8-23-11 Earthquake in Virginia
 As of this week, almost a month later
 North Anna Still Shut-Down
- June 2011 Flood in Nebraska
 Ft. Calhoun Flood Penetration Berm Failed
 Radioactive Run-Off Concerning Power Was Still Out 9-11
 Cooper Power Station
- April 2011 Tornadoes Knocked Out 3 Reactors in Alabama
- April 2011 Tornadoes Shut Down Two Reactors
 Surry in Virginia Shut Down Due To Loss of Power
- April 2011 Crystal River Nuke in Florida Shut For Cracking Concrete
- FERMI 2 Closed For Raccoon, a Tornado and 100,000 gallon spill inside Fermi 2
- Fires Closed Reactors in Ohio and South Carolina
- Browns Ferry cuts production by 50% due to HEAT 7/26/10

NRC CAN SAY NO TO LIMERICK RELICENSING

According to NRC's Documents For Relicensing,

An Alternative To Limerick License Renewal

Includes:

Reasonable Alternative Energy Sources

NRC CAN CHOOSE SAFE, CLEAN ALTERNATIVES

There Is NO NEED For Limerick Relicensing.

- 1. Evidence In The Following Attachments Shows That It Is Realistic For Limerick's Electricity To Be Replaced During The 18 Years Until Limerick's License Expires.
 - Clean, safe, alternatives are available and being used right now.
 - It is unacceptable to continue to subject our region to this dirty, dangerous technology that threatens the entire Philadelphia region with harmful routine radioactive contamination and the unthinkable risk of a catastrophic meltdown.
- 2.A Body Of Evidence Of Limerick Nuclear Plant's Harms and Threats To Our Region Provided By ACE For This Environmental Impact Statement Shows Our Region Can't Afford 20 More Years Of Limerick Nuclear Plant's Dirty, Dangerous, Costly Electricity.
 - Every day Limerick operates, our region faces on-going radioactive contamination of our bodies and our environment, increasing deadly wastes building up in our back yards, and the risk of meltdown and a catastrophic nuclear disaster.
 - There is no way eliminate those threats.

FACTS DISPUTE NUCLEAR INDUSTRY FICTION:

- 1. A BODY OF RESEARCH SHOWS LIMERICK'S DIRTY, DANGEROUS ELECTRIC CAN BE REPLACED WITH CLEAN, SAFE ENERGY THAT WON'T CONTINUOUSLY POISON US WITH RADIATION AND THREATEN US WITH NUCLEAR DISASTER!
- 2. WE WON'T NEED LIMERICK'S ELECTRICITY, LONG BEFORE LIMERICK'S PERMIT EXPIRES. Evidence shows why the lights won't go out when Limerick closes.
- 3. A LONG LIST OF NEWS, REPORTS, AND RESEARCH SHOW SOLAR POWER COULD PROVIDE ALL OUR ELECTRICITY NEEDS IN THE NEAR FUTURE.
- 4. BACK-UP TECHNOLOGY EXISTS NOW TO MAKE SOLAR AND WIND BASELOAD POWER.
- 5. EVIDENCE OF HUGE SOLAR INSTALLATIONS AT LARGE BUSINESSES IN OUR REGION AND RESIDENTAL INSTALLATIONS DISPEL THE MYTH THAT LARGE AMOUNTS OF LAND ARE NEEDED TO REPLACE LIMERICK'S ELECTRIC.
- 6. REDUCING ELECTRICITY USE ENERGY CONSERVATION, WITH A WIDE RANGE OF EFFICIENCY STRATEGIES AND PRACTICES, AND ENERGY SAVING WINDOWS, APPLIANCES, ELECTRONICS.

Safe, Clean, Reasonable Alternatives Are Available.

- Renewable energy sources can be built and operational in a matter of 18 months or less.
- Clean, safe, renewable energy use will continue to increase and become more prevalent.
- 24 studies in this section show Limerick's electricity can be replaced now by a variety of truly safe, clean, cost effective alternatives.
- The case supporting use of solar power is made in this section. It makes no noise, can be put on rooftops and private property, and is cost competitive. In fact, taking away nuclear subsidies, solar is far cheaper. Solar panels have few or no moving parts and negligible operating costs.
- Large back-up systems make 100% Solar and Wind Possible Already in New York, coming soon to PA. (Flywheel Energy Storage making solar and wind viable base-load power).
- Substantial energy loss through transmission is drastically reduced by producing and using solar and wind directly at homes and businesses.
- Energy conservation and efficiency will continue to reduce energy consumption, save money, and create jobs.

There is no need for Limerick relicensing. LIMERICK MUST BE CLOSED, NOT RELICENSED

EXELON SHOULD START TO TRANSITION
TO SAFER, CHEAPER 21ST CENTURY TECHNOLOGIES NOW,
AND BEGIN RETRAINING WORKERS IMMEDIATELY.

PA SOLAR FACTS DISPUTE NUCLEAR INDUSTRY FICTION

The Nuclear Industry and Their Supporters:

- ✓ Inaccurately Claim Solar Power is Not Feasible or Dependable for PA
- ✓ Inaccurately Claim We Need Nuclear Power To Keep The Lights On NOT TRUE!

PA SOLAR POWER

SOLAR INSTALLATIONS IN OUR REGION Examples of a long and growing list of regional business and personal solar installations

- Westtown School 34-kilowatt system 1 of the largest solar panel installations locally
- French Creek and Stargazers Vineyards
- Manatawny Creek Winery 64 Panels
- Merck & Co. Solar Panel Installation 6400 solar panels top of Merck parking deck in Upper Grnnedd Reported 2010
- GlaxoSmithKline 406 kW rooftop solar power system Upper Providence Announced 2010
- Bucks County Landfill (Grows) 3-megawatt power plant largest east of Arizona
 17,000 solar panels Power for 400 homes Joint project Exelon, SunTechnics, Epuron
- Vast numbers of local residents have installed solar power at their homes on rooftops, on property, and by solar poles (too numerous to list), including the ACE Office / Cuthbert Residence in North Coventry, which includes a battery back-up system

Since 2002 over 350 photovoltaic (PV) and solar thermal energy projects were installed for commercial customers, universities, and government buildings. PA Examples:

- South roof of the governor's residence in Harrisburg 2.8-kilowatt PV system
- DEP Southeast Regional Office in Norristown 4.8-kilowatt system
- Tredyffrin and Willistown Township Buildings

Philadelphia Was Named A "Solar American City" by DOE - April, 2008

1 of 25 cities aimed at jump-starting solar power projects and improving technology - Examples:

- Philadelphia Navy Yard Brownfield closed since 1996
 1.4 megawatt solar power plant on 6 to 8 acres 6,000 to 8,000 solar photovoltaic panels generating enough power for 200 homes per year.
- Friends Center Building in Philadelphia 10-kilowatt system
- Eagles Stadium Lincoln Financial Field in Philadelphia
 To generate all its own power with turbines and solar panels by the end of 2011, estimated to save \$60 million in energy costs. Eagles owner, Jeffrey Lurie, told the Associated Press that the Eagles are going off the grid as part of their plan to be a socially responsible organization.

SOLAR

NEWS, FACTS, AND REPORTS DISPEL NUCLEAR INDUSTRY MYTHS

1999

Renewable Are Ready

Union of Concerned Scientists

Today a Host of Safe, Clean, Renewable Energy Technologies Are More Than Ready. Combined, Importantly, With Energy Efficiency, They Tender Nuclear Power As Unnecessary.

2006

SOLAR POWER Can Provide 55 Times Our Nation's Energy Needs.

U.S. Department of Energy (DOE) Report

We Don't Need New Nuclear Plants. Solar Power Is Faster, Safer, Less Costly to Taxpayers.

- > PV technology can meet electricity demand on any scale.
 - Currently available sites—such as vacant land, parking lots, and rooftops—could be used.
 - Alternatively, PV systems built in the "brownfields"—the estimated 5 million acres of abandoned industrial sites in our nation's cities—could supply 90% of America's current electricity.

July 26, 2010

Nuclear Energy Loses Cost Advantage

By Diana S. Powers, The New York Times

"Solar photovoltaics have joined the ranks of lower-cost alternatives to new nuclear plants," Dr. John O. Blackburn, a professor of economics at Duke University, in North Carolina New solar-nuclear cost report www.ncwarn.org.

Shows why the "nuclear revival" is unnecessary and why the industry demands that the enormous financial risks be transferred to the public, a scheme that could <u>waste trillions of taxpayer and ratepayer dollars</u>. Note:

- Building nuclear plants would "greatly impede market access for competing energy sources.
- Spending years considering new nukes is making climate change worse by diverting time and money from efficiency and clean power.

9-21-10

Solar Cell Production Climbs to Another Record in 2009

11-10

New Solar Power is Projected to be Cheaper Than Nuclear Power - DOE's Energy Information Administration Report

Projects off mid-Atlantic coast - are beginning to become reality.

1-28-11

Cheap Solar Energy Set to Displace Nuclear Power

http://www.upi.com/Science_News/Resource-Wars/2011/01/28/Cheap-solar-energy-set-to-displace-n-power/UPI-61211296221080/ Energy Resources WASHINGTON, Jan. 28 (UPI) -- New research has established that sophisticated new solar energy production methods make it far and away the cheapest and least hazardous energy source, certainly cheaper and safer than nuclear power.

3-27-11

Concentrated solar thermal power could replace nuclear reactors

http://blog.hasslberger.com/2011/03/concentrated_solar_thermal_pow.html

3/29/11

Renewables Are More Than Ready

Huffington Post - Karl Grossman - Professor of journalism, SUNY/College at Old Westbury

There's no need for nuclear power because there are safe, clean, renewable energy technologies, not coal, oil and gas, here to substitute for nuclear power.

- Scientific American, a most conservative scientific publication, in a cover story on October 26, 2009 -- unveiled its "A Plan for a Sustainable Future." It <u>declared</u> in its "Plan to Power 100 Percent of the Planet with Renewables" that, "wind, water and solar technologies can provide 100 percent of the world's energy, eliminating all fossil fuels."
- British magazine New Scientist, October 11-17, 2009, issue on safe, clean, renewable energy technologies -- titled "Our Brighter Future" -- presented a United Nations report declaring that "renewable energy that can already be harnessed economically would supply the world's electricity needs."
- From solar to wind (now the fastest-growing and cheapest new energy technology) to wavepower to tidal-power to bio-fuels to small hydropower to co-generation (combining the generation of heat and electricity) and on and on, a renewable energy windfall is at hand.

3-30-2011

Study: Global Solar Transition Achievable in 20 Years - Even With Peak Oil For more information contact info@iprd.org.uk and/or call +44(0)7824 441 044

4-8-11

GE goes more solar

5-23-11

Sungevity, Lowe's Cut Deal To Bring Solar To The Masses

6-13-11

NEW SOLAR POWER PLANT CAN GENERATE ELECTRICITY AT NIGHT Improves reliability and nighttime availability of solar energy

6-14-11

Google invests \$280 million in SolarCity

7-5-11

U.S. – Based Renewable Energy Production Surpasses Nuclear Energy Production.

Monthly U.S. Energy Review Said - Renewable energy passed a milestone – increasing electrical output by 25.82% in the 1st 3 months of 2011, compared to same time in 2010. - Solar-generated electricity increased by 104.8%.

Alternative energy production surpasses nuke in us

http://www.solarindustrymag.com/e107_plugins/content/content.php?content.8223

7-7-11

Gov't Report : U.S. Now Receives More Power From Renewables Than Nuclear

Study found solar energy generation increased by 104.8 percent since early 2010, while wind power has increased by 40.3 percent during the same time frame. This renewable thrust bodes well for the United States, particularly given the continued environmental and health impacts expected following the Fukushima disaster in Japan earlier this year.

7-8-11

Switching The Energy Economy Of San Antonio

San Antonio's mayor says he wants to make the city a hub for alternative and renewable energy businesses. Ira Flatow and guests discuss how a city can change its energy habits. Plus, smart meters let utilities know how much energy a house is using minute by minute.

7/28/11

Solar Power Co Plans Giant Arizona Tower

http://abcnews.go.com/Technology/solar-power-giant-arizona-tower-planned-generate-clean/story?id=14163138 Centerpiece of a giant non-polluting power plant, making electricity from the heat of the sun.

- The project was started by an Australian company called EnviroMission, which says it hopes, by the time it is finished construction in early 2015, to provide enough electricity to power the equivalent of 200,000 homes. It would burn no fuel. Nothing quite like it has ever been tried in America before...
- When completed, the facility will consist of a tower approximately 2,000 feet tall and a canopy 2,000 feet in diameter covering the ground at the base of the tower. The sun will heat the air inside the canopy, and the heated air will be sucked into the tower and rise to the top.
- The rising air will be used to turn turbines to make electricity. The heated air would then be vented out the top of the tower. More air would be drawn into the system through openings at the base of the canopy.

http://www.parkerpioneer.net/articles/2011/07/05/news/doc4e13456176ef2622908813.txt

September 28, 2011

Google: Rent Your Solar Panels From Us

By: Candace Lombardi

Google has created a \$75 million fund with Clean Power Finance, a company that offers financing for residential solar panel installations. The investment will enable 10,000 homeowners to install solar panels on their homes.

PA Solar Installations, Solar News, and Reports
Compiled By The Alliance For A Clean Environment (ACE) (610) 326-2387

October, 2011

Research Shows Limerick Nuclear Plant's Energy Production Can Be Replaced

The nuclear industry, and their lobbyists, promote a false argument claiming that solar and wind can't supply baseload power. **UNTRUE!**

Many New Technologies Are Being Used Right Now For Storage, Making Solar and Wind Available 24 Hours A Day.

For Example:

- A new flywheel energy storage technology facility opened in 2011 in New York makes 100% solar and wind possible now.
- A second facility is planned for Hazle Township, PA, for completion by late 2012.
- Solar battery back-up systems are already in use by residents in our region.

Flywheel Energy Storage see: http://www.energyjustice.net/node/165

For the other studies on alternatives, see this:

http://www.energyjustice.net/solutions/c_and_e and

http://www.ieer.org/carbonfree/ (though IEER promotes biomass and biofuels),

24 Clean Energy Studies Done Within The Last Five Years.

Scott Sklar, President, The Stella Group, Ltd.

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The Stella Group, Ltd.. is a strategic technology optimization and policy firm for clean distributed energy users and companies which include advanced batteries and controls, energy efficiency, fuel cells, geo-exchange, heat engines, minigeneration (natural gas/propane), microhydropower, modular biomass, photovoltaics, small wind, and solar thermal (including daylighting, water heating, industrial preheat, building air-conditioning, and electric power generation). The Stella Group, Ltd. blends distributed energy technologies, aggregates financing (including leasing), with a focus on system standardization. Scott Sklar, the Group's founder and president, lives in a solar home and has a zero energy office building in Arlington, Virginia and his coauthored books:The Forbidden Fuel was re-released in 2010 for its 2nd printing, and A Consumer Guide to Solar Energy, was re-released for its third printing.

Scott Sklar serves as Steering Committee Chair of the Sustainable Energy Coalition, composed of the renewable energy and energy efficiency trade associations and analytical groups, and sits on the national Boards of Directors of the non-profit Business Council for Sustainable Energy, Renewable Energy Policy Project, and the Policy Committee of the Sustainable Buildings Industry Council.. Sklar is an Adjunct Professor at the George Washington University teaching a unique multidisciplinary sustainable energy course. On November 4, 2010 Secretary Locke approved Sklar's appointment to the Department of Commerce Renewable Energy and Energy Efficiency Advisory Committee (RE&EEAC).

SKLAR'S TOP 24 CLEAN ENERGY REPORTS

1. GREENPEACE/DLR

The world could eliminate fossil fuel use by 2090 by spending trillions of dollars on a renewable energy revolution, the European Renewable Energy Council (EREC) and environmental group Greenpeace said. The 210-page study is one of few reports -- even by lobby groups -- to look in detail at how energy use would have to be overhauled to meet the toughest scenarios for curbing greenhouse gases outlined by the U.N. a Climate Panel. "Renewable energy could provide all global energy needs by 2090," according to the study, entitled "Energy (R)evolution." EREC represents renewable energy industries and trade and research associations in Europe. http://www.greenpeace.org/usa/Global/usa/report/2009/4/energy-revolution.pdf

- 2. **ASES/NREL** U.S. Energy Experts Announce Way to Freeze Global Warming On January 31, 2007 at a press conference in Washington, D.C., ASES unveiled a 200-page report, Tackling Climate Change in the U.S.: Potential Carbon Emissions Reductions from Energy Efficiency and Renewable Energy by 2030. The result of more than a year of study, the report illustrates how energy efficiency and renewable energy technologies can provide the emissions reductions required to address global warming. U.S. Carbon Emissions Displacement Potential from Energy Efficiency and Renewable Energy by 2030 57% Energy Efficiency, 43% Renewables http://ases.org/images/stories/file/ASES/climate_change.pdf
- 3. **GOOGLE** Google.org, the philanthropic arm of the search giant, has unveiled a plan to move the U.S. to a clean-energy future. The vision: In 2030, electricity will be generated not from coal or oil but from wind, solar, and geothermal power. Energy demand will be two-thirds what it is now, thanks to stringent energy-efficiency measures. Ninety percent of new vehicle sales will be plug-in hybrids. Carbon dioxide emissions will be down 48 percent. Getting there will cost \$4.4 trillion, says the plan -- but will recoup \$5.4 trillion in savings. The Clean Energy 2030 plan would require ambitious national policies, a huge boost to renewables, increased transmission capacity, a smart electricity grid, and much higher fuel-efficiency standards for vehicles. http://googleblog.blogspot.com/2008/10/clean-energy-2030.html
- 4. National Research Council Renewables Report June 09

Renewable energy resources in the U.S. are sufficient to meet a significant portion of the nation's electricity needs says a new report from the National Research Council. Press and link to report at: http://www8.nationalacademies.org/onpinew s/newsitem.aspx?RecordID=12619 or http://tinyurl.com/neka69 http://www.nap.edu/openbook.php?record_id=12619&page=1#

- 5. INSTITUTE FOR LOCAL SELF RELIANCE (October 2009) report by David Morris "SELF RELIANT STATES� -- Excerpted Executive Summary Conclusion: "All 36 states with either renewable energy goals or renewable energy mandates could meet them by relying on in-state renewable fuels. Sixty-four percent could be self-sufficient in electricity from in-state renewables; another 14 percent could generate 75 percent of their electricity from homegrown fuels. Indeed, the nation may be able to achieve a significant degree of energy independence by harnessing the most decentralized of all renewable resources: solar energy. More than 40 states plus the District of Columbia could generate 25 percent of their electricity just with rooftop PV. In fact, these data may be conservative. The report does not, for example, estimate the potential for ground photovoltaic arrays although itt does estimate the amount of land needed in each state to be self-sufficient relying on solar even though common sense suggests that this should dwarf the roofftop potential..... It is at the local level that new technologies like smart grids, electric vehicles, distributed storage, and rooftop solar will have their major impact.â€� Contact for David Morris at: cell 612-220-7649 or dmorris@ilsr.org http://www.ilsr.org/pubs/selfreliantcities.pdf
- 6. Geothermal according to MIT study

Jan 22, 2007 ... MIT study: Get more energy from Earth's heat. Geothermal could meet 10 percent of U.S. needs by 2050. www.msnbc.msn.com/id/16755646; www.mit.edu http://web.mit.edu/newsoffice/2007/geothermal.html

- 7. Concentrated Solar Power from Earth Policy Institute http://www.earth-policy.org/Updates/2008/Update73.htm; easy 15% also see: SOLAR ENERGY COULD PROVIDE 8000+ MW OF CAPACITY IN WESTERN STATES BY 2015 www.sustainableenergycoalition.org/factoids/factoid_12.html
- 8. WAPA and Sandia/NREL Studies similar conclusions: A USDOE report for the Western Governors' Association (WGA) in 2005 provided an assessment of the potential impact of CSP. It found that by using only available land with the most intense sunshine, over 6,800 GW of electricity could be generated in the Southwest.17 To put this in perspective, the electric generating capacity of the entirecountry is currently about 1,000 GW.18 http://www.nrel.gov/docs/fy07osti/41233.pdf

9. CSP Report

Assessment of Parabolic Trough and Power Tower Solar Technology Cost and Performance Forecasts� Draft 3, Sargent and Lundy, LLC, October 2002 http://www.nrel.gov/csp/troughnet/pdfs/41233.pdf

- 10. **Rooftop solar power** Energy on and in Rooftops bottom line is probably half the energy for buildings can be generated on-site so let's say 15% in US http://www.nrel.gov/docs/fy06osti/39830.pdf The solar energy potential of commercial building rooftops in the USA United States commercial building rooftops may be the most wasted real estate in North America. Combined, these predominantly flat rooftops represent an area of more than 1,000 square miles that, outside of their sheltering function, do nothing more than soak up the sun, literally. More than half of this space has the potential to produce energy using simple photovoltaic, or solar electric, generating stations. Bill Jeppesen, for RWE SCHOTT Solar, Inc., USA reports (8/20/04)
- 11. Navigant / Energy Foundation 2005 market study technical potential of PV in the US. Using only roof space (per Census) and using average amounts of shading, tilt, etc., within the US, their estimate was maximum technical potential in the US of 1,037,519 MWp, which would represent almost 1/3 of total electricity US usage MWh for MWh http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B73D84D4M8HD16&_user=10&_coverDat
- e=07%2F01%2F2004&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_searchStrld=1427914091&_rerunOrigin=google&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=f5ebf83afb41e029ef31f3d8e1999534
- 12. Worldwide Capacity of Solar Thermal Energy Greatly Underestimated -- 2004 (10 November 2004). The International Energy Agency's Solar Heating and Cooling Programme and major solar thermal trade associations publish new statistics on the use of solar thermal energy. The new data expressed for the first time in GWth, rather than in square meters of installed collector area shows the global installed capacity to be 70 GWth (70.000 MWth). http://www.iea.org/textbase/nppdf/free/2007/Renewable_Heating_Cooling.pdf13.
- 13. Water Energy EESI, EPRI, NHA, OREC www.eesi.org/060807_Hydropower Several studies conclude that upgrading existing dam turbines, installing free-flow hydropower (no dams or diversions) tidal, wave and ocean currents and thermal could produce 10% of US energy. http://www.eesi.org/060807_Hydropower

14. Waste heat to produce electricity

ACEEE, EPA and DOE conclude that an easy 8 % of US electricity and probably more in displacing other thermal applications could be displaced by CHP. http://www.aceee.org/pubs/ie983.htm

15. WIND A new analysis by the U.S. Department of Energy (released 5\08) finds that wind can be a major contributor to the country's energy mix, supplying up to 20% of electricity by 2030. For the report

and executive summary: www.20percentwind.org http://www.20percentwind.org/20percent_Summary_Presentation.pdf

- 16. **REN 21: Global Status Report**: Renewables / 2009 Update (pdf, 880KB) . www.ren21.net/globalstatusreport /g2009.asp
- 17. **Annual biomass resource potential** from forest and agricultural resources potential biomass sources, this **study** found over 1.3 billion dry www1.eere.energy.gov/**biomass** /.../final_billionton_vision_report2.pdf
- 18. The United Nations Environment Program and the Renewable Energy Policy Network for the 21st Century today reveal in a pair of new reports. Jul 15, 2010 ... techcrunch.com/2010/07/15/global-cleanenergy-report-un-2009/
- 19. Special Report Renewable Energy Sources and Climate Change Mitigation. Contents ... 02-05 March 2010 3rd Lead Author Meeting for the SRREN, Oxford, UK ... www.ipcc-wg3.de/...reports /special-report-renewable-energy-sources -
- 20. 100% Renewable Electricity A roadmap to 2050 for Europe and North Africa http://www.ukmediacentre.pwc.com/imagelibrary/detail.aspx?MediaDetailsID=1694&ClientID=1%20
- 21. Clean Energy Investments Report documents the dawning of a new worldwide industry-clean ... businesses and installers in 2010 and 2011. Clean energy investments are forecast to ... www.pewtrusts.org/uploadedFiles/.../Reports /Global.../G-20%20Report.pdf
- 22. **EIA International Energy Outlook 2010: Renewable Energy** Grows, But ... by Harry Tournemille on June 1, **2010** ... New **Report** Says **Renewable Energies** Will Dominate World's Energy Supply System · **Renewable Energy** Good For Workers' ... www.energyboom.com/.../eia-international-energy outlook-**2010** renewable- energy-grows-fossil-fuels-dominate
- 23. **WWF** report indicates how its vision of a 100 per cent **renewable** and sustainable energy supply could be realized. In 2050, ambitious energy saving ... www.worldwildlife.org/climate/energy-**report** .html
- 24. The Intergovernmental Panel on Climate Change said in a May 15, 2011 released report that the availability of renewable sources like the wind and sun was virtually unlimited, and could provide up to 77 percent of the world's energy needs by 2050, but governments needed to adopt policies to take advantage of them.

http://www.ipcc.ch/news_and_events/docs/ipcc33/PRESS%20RELEASE%20Updated%20version%20-%20Potential%20of%20Renewable%20Energy%20Outline.pdf

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FACTS STRONGLY SUGGEST NUKES NOT SAFE

Karen Walsh, who claims that nuclear power is "clean, safe, and reliable" (Nuclear Power is Clean, Safe, March 15), is not a health professional, but a communications specialist and political strategist. She works for the PA Energy Alliance, whose mission is to promote nuclear power, i.e. make lots of money from running nuclear reactors. Her statements illustrate how science can be politicized – while people suffer needlessly.

Here then, are the facts about nuclear reactors – facts documented by experts.

Nuclear reactors like Limerick create the same materials found in atomic bombs (Cesium-137, Iodine-131, Strontium-90, etc.). Each causes cancer and is especially harmful to the fetus, infant, and child.

The amount of these radioactive poisons in reactors is massive, equal to several hundred Hiroshima bombs. A meltdown from an accident or terrorist attack would cause many thousands to suffer from radiation poisoning or cancer. Most radioactivity is stored at plants like Limerick, but some must be routinely released into local air and water, entering bodies by breathing and the food chain.

The radioactivity absorbed is relatively low dose, but not necessarily safe. A 2005 report by experts at the National Academy of Sciences reviewed several hundred scientific articles, and concluded even low radiation doses are harmful to humans.

Ms. Walsh cites a 2004 Columbia University study that followed U.S. nuclear workers for 15 years had reported they had low cancer rates. But she ignores a 2008 study in a scientific journal tracking Canadian nuclear workers for 57 years that found the higher the radiation exposure, the higher the risk of cancer death.

She also ignores several recent studies showing those most sensitive to radiation – children near reactors – suffer from high cancer rates. The largest such study was in Germany, and similar results were found in the U.S. Dr. Jun Li of the U.S. Centers for Disease Control and Prevention stated that radiation exposure may be one reason why childhood cancer is highest in the northeast.

Ms. Walsh also makes the preposterous claim that nuclear power is the "only energy source that can reliably generate electricity with no harmful greenhouse gas emissions," blatantly ignoring safe sources like wind and solar power.

The "truths" about nuclear power should not come from biased non-scientists who make lots of money from reactors, but from educated, unbiased scientists.

Joseph J. Mangano MPH MBA Executive Director, Radiation and Public Health Project, New York NY www.radiation.org

ATTACHMENT SHOWS SOURCES

1. Estimated Deaths/Cases of Acute Radiation Poisoning and Cancer Deaths Near the Limerick Nuclear Plant, Following a Core Meltdown

Type of Effect	Limerick 1	Limerick 2
Deaths, Acute Radiation Poisoning	74,000	74,000
Cases, Acute Radiation Poisoning	610,000*	610,000*
Cancer Deaths	34,000	34,000

^{*} Largest estimated number for any U.S. nuclear reactor

Notes: Deaths from acute radiation poisoning and cancer calculated for a radius of 20 miles from the plant, acute radiation poisoning cases calculated for radius of 55 miles from the plant. Source: Sandia National Laboratories, Calculation of Reactor Accident Consequences (CRAC-2) for U.S. Nuclear Power Plants. Prepared for U.S. Congress, Subcommittee on Oversight and Investigations, Committee on Interior and Insular Affairs, November 1, 1982. The information was published in New York Times and Washington Post the following day.

- 2. Committee on the Biological Effects of Ionizing Radiation (BEIR VII). Washington DC, National Academy of Sciences, June 29, 2005.
- 3. Zielinski JM, Shilnikova NS, Krewski D. Canadian national dose registry of radiation workers: overview of research from 1951 to 2007. International Journal of Occupational Medicine and Environmental Health 2008;21(4):269-75.
- 4. In all 17 studies of childhood leukemia incidence and mortality near nuclear plants, covering 9 nations from 1984-1999, an elevated rate was documented. No clear doseresponse pattern has emerged. Within 16 kilometers of nuclear plants, the meta rate for leukemia mortality and incidence were 1.23 and 1.23 for age 0-9, and 1.09 and 1.11 for age 0-25. Baker PJ and Hoel DG. Meta-analysis of standardized incidence and mortality rates of childhood leukaemia in proximity to nuclear plants. European Journal of Cancer Care 2007;16:355-63.
- 5. Near the Krummel nuclear plant in Germany, 14 cases (vs. 4.0 expected) of leukemia age under 15 were documented from 1990-2005 within 5 kilometers (SIR = 3.5). Hoffmann W, Terschueren C, Richardson DB. Childhood leukemia in the vicinity of the Geesthacht nuclear establishments near Hamburg, Germany. Environmental Health Perspectives 2007;115(6):947-52.
- 6. The childhood leukemia and cancer rates near all 16 major nuclear power plants in Germany were elevated. From 1980-2003, the Odds Ratio for leukemia and all cancers under age 5 = 1.76 and 1.47 within 5 kilometers (n=77), 1.37 and 1.23 within 10 kilometers (n=235). Spix C, Schmiedel S, Kaatsch P, et al. Case-control study on childhood cancer in the vicinity of nuclear power plants in Germany 1980-2003. European Journal of Cancer 2008:44(2);275-84.

- 7. Dr. Jun Li of the U.S. Centers for Disease Control and Prevention stated that environmental factors, including radiation exposure, might play a role in the fact that the highest child cancer rates age 0-19 from 2001-2003 in the U.S. are in the northeast states. Li quoted in Study: Kids' cancer rates highest in Northeast, USA Today, June 2, 2008, citing LI J, Thompson TD, Miller JW et al. Cancer incidence among children and adolescents in the United States, 2001-2003. Pediatrics 2008;121(6):1470-1477.
- 8. Near 39 U.S. nuclear plants, mortality for childhood leukemia has risen compared with the U.S. The standard mortality ratio (SMR) for leukemia mortality age 0-19 from startup to 1984 = 0.960 (n=1155), while the SMR from 1985-2004 = 1.055 (n=1037). The oldest plants experienced the greatest increase in SMR. Mangano JJ and Sherman JD. Childhood leukaemia near nuclear installations. European Journal of Cancer Care 2008;17:416-18.