

NRC

NUCLEAR REGULATORY COMMISSION

NRC IS DECIDING THE FATE OF OVER 8 MILLION PEOPLE WITHIN 50 MILES OR MORE OF LIMERICK NUCLEAR PLANT

PROBLEM: NRC PROTECTS EXELON'S PROFITS, NOT OUR HEALTH, SAFETY, AND FINANCIAL FUTURE

NRC is the government agency charged by the U.S. Congress to protect public health and safety and the environment related to the operation of Limerick Nuclear Power Plant. However, evidence shows NRC conclusions and decisions repeatedly put nuclear industry profits ahead of public health and safety, and the environment.

NRC held a public hearing 9-22-11 in Pottstown, PA, supposedly to hear from the public on the environmental impacts of Limerick Nuclear Plant related to Exelon's request to operate Limerick Nuclear Plant for an additional 20 years (60 years total). However, the public hearing was not widely publicized and was structured to minimize public input. Comments by NRC and Exelon consumed a majority of each two hour session. Exelon's parade of executives and corporate supporters focused on money, not public health, safety, and the environment.

ACE investigated the unprecedented harms and threats of Limerick Nuclear Plant since 2000. Since 2001, ACE lobbied aggressively for an Updated Environmental Impact Statement, since the one being used by Exelon for all permitting requests was from the 1980s, and based on "happy talk" with only estimated harms, not actual data resulting from operations.

ACE repeatedly requested and expected that there would be actual comprehensive independent studies done for an updated Environmental Impact Statement (EIS) to accurately determine actual harms and future threats from Limerick's operations from 1985 to 2012. It became painfully and shamefully evident 9-22-11 that NRC has no intention of providing our community with legitimate independent research to provide a credible EIS.

Despite a large body of documented evidence of environmental and health harms since Limerick started operating in 1985, brought to NRC's public hearing by ACE, in graphics and substantial packets, ACE was given just 5 minutes in each session to summarize our 11-year investigation of the full range of unprecedented Limerick harms and threats. Between sessions, the NRC official in charge of Limerick's EIS actually refused to look at the graphics for a better understanding, and dismissed documented evidence with unsubstantiated typical denials of harm.

In addition to submitting over a thousand page application to NRC, which should have been Exelon's comments on the EIS, Exelon was given time for multiple executives to repeat absurd false claims that Limerick Nuclear Plant was clean and safe.

NRC conclusions for Limerick Nuclear Plant's EIS will likely ignore and/or dismiss Limerick Nuclear Plant's unprecedented threats and harms, documented and summarized by ACE, in over 1,000 pages of written testimony to NRC October 2011. We urge you to review the ACE website for most of these important issues and the following report to better understand NRC's negligence.

**ELECTED OFFICIALS IN CONGRESS CAN PROTECT US FROM NRC'S NEGLIGENT DECISIONS
BY DEMANDING THAT NRC CLOSE LIMERICK NUCLEAR PLANT
TO PROTECT PUBLIC HEALTH, SAFETY, AND THE PUBLIC'S FINANCIAL INTERESTS**

**A BODY OF EVIDENCE ON THE ACE WEBSITE
SHOWS WHY LIMERICK NUCLEAR POWER PLANT
MUST BE CLOSED TO PREVENT DISASTER, NOT BE RELICENSED**

CONTACT ELECTED OFFICIALS TODAY!

***Urge Them To Demand That NRC Close Limerick
To Prevent Catastrophic Meltdown Consequences***

**WITHOUT YOU CONTACTING ELECTED OFFICIALS, THEY WILL
PROTECT EXELON'S BOTTOM LINE WITH SILENCE OR SUPPORT.
MANY TAKE EXELON'S CAMPAIGN CONTRIBUTIONS.**

NRC NEGLIGENCE IS ALARMING!

It Is Clear Why NRC Has Been Called A "Lapdog" To The Nuclear Industry.

- **Absent Dead Bodies, Nothing Seems to Deter NRC From Keeping Aging Reactors Like Limerick Open.**

NRC WON'T PROTECT YOU

**Attached Evidence Shows Why NRC's Negligence Related Specifically To
Limerick Nuclear Power Plant Has Already Jeopardized Our Region.**

**Evidence Also Shows NRC Significantly Undermines Safety, Inching Aging
Reactors Like Limerick Closer To Catastrophe!**

NRC Approved 71 of 71 Nuclear Reactor License Renewals

That's A Radioactive Rubber Stamp, NOT A Legitimate Licensing Process

RUBBER STAMP PERMITTING DESTROYS NRC'S CREDIBILITY

- **WITHOUT INTERVENTION BY ELECTED OFFICIALS, NRC WILL LIKELY
RUBBERSTAMP LIMERICK RELICENCING TOO, REGARDLESS OF
UNPRECEDENTED HARMS AND THREATS**

**The Following Information In This Report About NRC's Dangerous Policies Provides
Ample Evidence And Cause For Elected Officials To Demand Closure Of Limerick.
In Summary, At The End Is ACE Official Testimony On Limerick Relicensing.**

**Following Is A List Of Sections In The Book Of Written Testimony (Over 1,000 Pages)
Presented to NRC from ACE October 2011 Documenting Reasons
Limerick Nuclear Power Plant Must Be Closed, Not Relicensed Until 2049**

Since 1985, Unprecedented Environmental Harms, Threats, and Risks From Limerick Include:

- 1. Radiation Into Air and Water From Routine and Accidental Emissions**
- 2. Major Air Pollution Under Health Based Standards of the Clean Air Act**
- 3. Schuylkill River Depletion and Major Drinking Water Contamination**
- 4. Radioactive Groundwater Contamination**
- 5. Radiation Reporting Levels Increased Dramatically After Japan Disaster**
- 6. Alarming Cancer Increases, Especially In Children, Since Limerick Started Operating**
- 7. Deadly High Level Radioactive Wastes Packed In Vulnerable Fuel Pools On Site**
- 8. Lax Fire Safety Regulations**
- 9. Accidents and Leaks From Corroding Deteriorating Equipment Plus Miles of Buried Pipes and Cables**
- 10. Increased Risk of Meltdown From More Frequent and Stronger Earthquakes and Other Natural Disasters**
- 11. Threats From Unguarded Terrorist Attacks With Planes and Missiles, Cyber Attacks**
- 12. Need for an Updated Evacuation Plan and Increased EPZ**
- 13. Increased Costs to the Public - More Cancers and Other Costly Illnesses, More Emergency Room Visits and Hospitalizations from Drastic Increases in PM-10 and TDS, Treatment For Drinking Water, Environmental Clean-Up**
- 14. Ways to Replace Dangerous, Dirty, Harmful, and Costly Nuclear Power With Safe, Clean, Renewable Energy**

Conclusion:

Harms, threats, and risks can and should be expected to increase continuously until Limerick's current operating licenses expire in 2029. It would be negligent for NRC to approve license renewals until 2049.

NRC's Track Record Reveals Negligence In Regulating And Oversight

The Following Information Validates and Verifies ACE Conclusions

MAJOR CONCERNS ABOUT NRC'S TRACK RECORD INCLUDE:

- ✓ **FAILED POLICIES**
- ✓ **WEAKENED REGULATIONS**
- ✓ **LAX ENFORCEMENT**
- ✓ **NEGLIGENCE**

NRC Puts Nuclear Industry Profits Ahead Of Public Safety. NRC Allows The Nuclear Industry To:

- Deceive the Agency
- Cut Corners
- Make Up Their Own Regulations
- Stack the Deck in Relicensing
- Demand Dangerous "Back-Fit Rules"
- Stall Corrective Actions or Avoid Them - To Save Nuclear Industry Money.

NRC Covers Up Lax Oversight, Industry Negligence, and Harms. Evidence Shows NRC:

- Denies Harms
- Ignores Risks
- Lowers Risk Estimates
- Weakens Regulations
- Delays Protective Action
- Makes Unsubstantiated Conclusions That Perpetuate and Increase Harms
- Provides Exemptions When Regulations and/or Standards Are Violated, Even For Security

EXAMPLES: NRC NEGLIGENCE AT LIMERICK NUCLEAR PLANT

- ✓ **NRC ALLOWS LAX FIRE SAFETY AT LIMERICK** - 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". NRC's fire safety policies include terms like, "Reduced Regulatory Burden", "Exemptions", and "Flexibility". Knowing fires can cause meltdowns, we need the SAFEST fire barriers and other safeguards, but that is not what NRC required at Limerick.
- ✓ **NRC REFUSES TO REQUIRE Exelon To Guard Limerick Against A 9/11 Type Terrorist Attack**- Knowing Limerick's fuel pools are vulnerable to attack by aircraft, 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. Either could lead to a nuclear fire and meltdown. Limerick Airport is about one mile away, but NRC refused to require it to close after 9/11, to limit risk of an air attack on Limerick's fuel pools creating a similar disaster as in Japan. NRC foolishly told us not to worry because Exelon owned the airport. 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. Pilot lessons may still be given at that airport.
- ✓ **NRC FAILED To Uncover An Al-Qaida Suspect Working At Limerick During Refueling For Six Years (2002 to 2007).** How effective are NRC screening requirements for the 2000 workers that come to refuel each year?
- ✓ **NRC RISKS INTERNAL COMBUSTION OF LIMERICK'S SPENT FUEL RODS BY ALLOWING LIMERICK TO REMOVE RADIOACTIVE FUEL RODS FAR**

SOONER THAN THEIR OWN PAMPHLET SAYS IS SAFE - NRC is allowing Exelon to remove Limerick's high-level radioactive fuel rods from cooling pools in far less than the 5 years originally required and considered safe. Rods could heat up and combust internally.

- ✓ **RECOGNIZED CORROSION CONCERNS IGNORED BY NRC** - NRC failed to do corrosive air testing, to estimate what could happen to highly radioactive fuel rods stored in Limerick's steel containers inside casks (containers are only estimated to safely hold wastes for 50 years, when wastes will remain dangerous for hundreds of thousands of years.) Steel containers will have to be replaced after 50 years, and fire could break out from overheated wastes. There is no guarantee the air cooling Limerick's casks is not so corrosive that removal will be impossible, leaving our region with a potential disaster.
- ✓ **FAILURE To Require Clean-Up of Limerick's Radioactive Groundwater -**
NRC's records confirm there were radioactive leaks and spills at Limerick. NRC should have required complete clean-up to avoid radioactive groundwater reaching public drinking water wells very close to Limerick. NRC ignored its oversight and its enforcement responsibilities. Not only did NRC's oversight fail to prevent leaks and spills at Limerick, NRC failed to require complete clean-up, jeopardizing near-by drinking water.
 - **NRC's "Leak First and Fix Later" Policy Is An Unacceptable Threat to Groundwater and Public Drinking Water.**
- ✓ **FAILURE TO REQUIRE ADEQUATE EVACUATION ZONE AND PLAN FOR THE 8 MILLION PEOPLE WHO LIVE WITHIN 50 MILES OF LIMERICK -**
NRC declared a 50 Mile Evacuation Zone for Japan, but is insisting 10 miles is good enough for people in this region. NRC's disgraceful lack of dealing with reality is astonishing. NRC is jeopardizing the lives of millions. Gridlock is inevitable in this heavily populated region. Safe evacuation is unlikely. Anyone stuck in gridlock would be heavily radiated in a Limerick disaster. There are not enough shelters or supplies in place. Philadelphia, just 20 miles downwind from Limerick, should also likely be evacuating. NRC fails to even provide people with a radiation plan to shelter in place until they can escape safely.

NRC MUST SAY NO TO RELICENSING LIMERICK BEFORE IT'S TOO LATE

Limerick Is A Similar Design To Japan Nuclear Plants That Exploded and Melted Down. The disaster at Japan's Fukushima nuclear plant is a tragic reminder of the extraordinary dangers of nuclear power. NRC should heed the warnings of the Fukushima nuclear disaster. It should not take a Chernobyl or Fukushima on U.S. soil for government bureaucrats to effectively regulate this dangerous technology. NRC's mandate is to protect the public, but for too long NRC has placed nuclear industry profits ahead of public health and safety.

NRC NEVER PROTECTED OUR INTERESTS

➤ **1981 NRC WAS SUED IN FEDERAL COURT**

In 1981, even before Limerick was built, NRC was sued in federal court, accusing NRC of violating the National Environmental Policy Act by not forcing PECO to consider Safety Enhancing Design Alternatives for Limerick Nuclear Power Plant.

- ✓ From the beginning, PECO cut corners to save money.
NOTE: Bechtel, the same company that built Limerick, installed a reactor vessel at San Onofre backwards in 1977 and was forced to redo the job...
- ✓ The 3rd Circuit Court of Appeals in Philadelphia ordered NRC to listen to the proposals for alternatives for improved safety in design, which was a major embarrassment to NRC and a setback for PECO.
- ✓ But the case dragged on nearly nine years, during which time Unit 1 was finished and Unit 2 approved.

NRC WEAKENS SAFETY RULES

AP Investigation Reported 6-20-11

NRC's Negligence Significantly Undermines Safety, Inching Reactors Like Limerick Closer To Catastrophe.

**NRC Has Been Relaxing Standards To Permit License Extensions For 71 of 71 US Reactors
NONE Were Rejected, Thus The Term "Rubberstamp Permitting"**

NRC Works With The Nuclear Industry To Keep Aging, Dangerous Reactors Operating

- When Valves Leaked NRC Allowed Up To 20 Times More Than The Original Leakage Limit
- When Rampant Cracking Caused Radioactive Leaks From Steam Generator Tubing An Easier Test Was Devised So Plants Could Meet Standards
- Thousands of Other Problems Were Uncovered Linked to Aging. All Could Escalate Dangers in an Accident, INCLUDING: Failed Cables - Busted Seals - Broken Nozzles - Clogged Screens - Cracked Concrete, Dented Containers - Corroded Metals - Rusty Underground Pipes

Findings are significant to every person in the Greater Philadelphia Region

AP historical records and interviews with engineers who helped develop nuclear power show:

**"Reactors Were Made To Last Only 40 Years" PERIOD!
Everything Reaches An End Of Its Life Span**

**Ironically, NRC and The Nuclear Industry Admit Some Parts Are Too Big
and Too Expensive To Replace, But Assert Age Is NO Issue.**

NRC WEAKENS SAFETY RULES

Associated Press Investigation - Reported 6-20-11

NRC TACTICS USED TO RUBBERSTAMP PERMITS!

- NRC and industry rewrite history of operations at nuke plants: **"NRC Colluded With Industry To Weaken Safety Standards"**
- NRC Weakens Standards With: **"Pencil Engineering"**. This Policy Significantly Undermines Safety, Inching Reactors Like Limerick Closer To Catastrophe.
- In an effort to meet safety standards, Aging Reactors are Coming up with **"Backfit After Backfit"**. Retired NRC chairman said: "It's Like Driving Model T's Today And Trying to Bring Them Up To Current Mileage Standards."
- The Deck Is Stacked In Relicensing To Ignore Increased Population Using The: **"Back-Fit Rule"**
- Safety Experts Call NRC Regulating: **"Tombstone Regulation"** NRC allows problems to fester until something goes very wrong. **"Until There Are Tombstones, They Don't Regulate"**.
- NRC worked with the nuclear industry to keep Deteriorating, Corroding, Aging, Dangerous Reactors Operating Beyond their 40-Year Permit, by **"Fudging The Numbers"**

- NRC Justified Many Safety Changes With A **Flawed Process Called "Risk-Informed" Analysis**. Employed widely by industry since the 1990s: Regulators set aside a strict check list applied to all systems. Instead they focus on features deemed to carry the highest risk.

FLAW: Risk-informed analysis doesn't explicitly account for age

- An older reactor is not viewed as inherently more unpredictable than a younger one
- Ed Lyman, a physicist with the Union of Concerned Scientists, says "risk-informed analysis weakens regulations, rather than strengthen them"

Examples of Deceptive Tactics:

- When Valves Leaked NRC Allowed Up To 20 Times More Than The Original Leakage Limit
- Valves to Confine Steam to the Reactor in Accidents at BWR like Limerick Were Originally Permitted to Leak at 11.5 Cubic Feet Per Hour - 1999, the Limit was Relaxed to 200 Cubic Feet Per Hour. Bigger Leaks Still Occur.
- When Cracking Caused Radioactive Leaks From Steam Generator Tubing - An Easier Test Was Devised So Plants Could Meet Standards

Beware: NRC Deception

Both NRC and the nuclear industry deceive the public by avoiding full and truthful disclosure and by downplaying and trivializing health risks, including cancer, genetic mutations, and birth defects.

Example: NRC's deceptive, shameful fact sheet on the radioactive groundwater contamination confirmed at 102 of 104 of our nation's nuclear plant reactors, including Limerick. They are clearly providing a cover-up for the nuclear industry.

Instead of addressing serious threats to drinking water from nuclear plants across our nation leaking radiation into groundwater,

NRC continues to hide and ignore the reality.

- 1. NRC fact sheets call leaks at 102 nuclear plant reactors a few.**
- 2. NRC falsely claims huge radioactive leaks into groundwater are "minor".**
 - ✓ Vermont Yankee - Up to 2.7 million picocuries per liter. That's NOT minor.
 - ✓ Illinois - Exelon bought bottled water for 600 people for 4 years. That isn't minor.
 - ✓ Oyster Creek - South Jersey's drinking water was contaminated at concentrations 50 times higher than allowed by law. It reached a major aquifer, southern New Jersey's main source of drinking water. That's NOT MINOR.
- 3. NRC misleadingly suggests leaks contain only one kind of radiation, tritium.**
 - ✓ Reactors involve 100 to 200 radioactive chemicals. Not just one is leaking into groundwater.
 - ✓ Radionuclides like strontium, cesium, iodine, and plutonium are also transported in underground pipes leaking radioactive wastewater into groundwater. All can cause cancer.
 - ✓ Exelon's own Radiological Monitoring Reports For Monitoring Wells At Limerick Nuclear Plant Show Groundwater Is Contaminated With Other Radionuclides.
- 4. NRC's attempts to trivialize health impacts from tritium by misleadingly stating that "*tritium is a mildly radioactive isotope*".**
 - ✓ Scientific studies show exposure to tritium is linked with higher cancer rates in humans.
 - ✓ Tritium should be securely stored for hundreds of years or it can enter the human body by breathing, eating, and drinking (mostly from drinking water).

5. NRC absurdly claims monitoring programs confirm the leaks do not affect public health and safety and the environment.

- ✓ There's a logical and reasonable conclusion and expectation that public health and safety are unnecessarily jeopardized.
- ✓ NRC does NO Monitoring. Without independent monitoring, there is no assurance public health is protected.
- ✓ Exelon is not required to report on any radionuclide contamination found under arbitrary and far too high background levels.

NRC Is Allowing Nuclear Industry Stall Tactics To Further Jeopardize Safe Drinking Water and Public Health.

- ✓ NRC is ceding its responsibility to voluntary industry initiatives that will add years on to a decades old environmental and public health risk problem. NRC turned its regulatory authority over to an industry that plans to stall corrective actions for several more years.
- ✓ **NRC should be mandating compliance with established requirements for control and monitoring of buried pipe systems carrying radioactive effluent.** In 1979 NRC initiated efforts to prevent uncontrolled radioactive releases to groundwater. To this day NRC is capitulating to an industry decision to take several more years before announcing an action plan.

It's long past time for NRC to actually protect the public interests instead of the profits of the nuclear industry. Once water is radioactive, it's too late.

NRC's UNPROTECTIVE FIRE SAFETY POLICIES

Jeopardize Our Region and The Nation

**Nuclear Plant Fires Can Lead to a Meltdown,
Yet NRC Dismisses Potentially Disastrous Consequences
From Lax Fire Safety Requirements at Nuclear Plants.**

NRC Protects Nuclear Industry Profits Over Public Safety.

NRC IS LITERALLY PLAYING WITH FIRE

NRC Allowed The Nuclear Industry To Weaken Fire Safety Regulations. NRC Caved In To Nuclear Industry Demands. Terms in NRC Fact Sheets Indicate The Degree to Which NRC Weakened Regulations.

Terms in NRC Fire Safety Fact Sheets Include:

- "SAFE ENOUGH"
- "Enforcement Discretion"
- "Flexibility"
- "Reduced Regulatory Burdens"
- "Exemptions"

NRC fire safety regulations were in place since 1976 and 1980, to assure a fire does not prevent a reactor from safely shutting down. Three decades after fire safety regulations were established, NRC is still failing to require full compliance. 125 fires were reported at 54 plants since 1995, an average of 10 per year (2008 GAO report).

Limerick Nuclear Plant Is NOT In Full Compliance With The Safest Fire Regulations.

- Given what is at stake for our region, there is no acceptable excuse for Exelon to avoid full compliance with fire-induced circuit faults.
- Limerick had fire safety violations. NRC enforcement response was LAX. Confirmed fire safety violations from 2007 and 2010 were confirmed by ACE
- **ELECTED OFFICIALS SHOULD SPEAK OUT AND DEMAND THAT NRC REQUIRE EXELON TO GET LIMERICK IN FULL COMPLIANCE WITH THE MOST STRINGENT FIRE SAFETY REGULATIONS IMMEDIATELY.**

NRC'S LAX OVERSIGHT ON FIRE SAFETY ISSUES INCLUDE:

Fire-Induced Circuit Faults

- NRC caved in to the industry, failing to demand full compliance with regulations and failing to hold nuclear plant owners fully accountable through enforcement of violations. NRC is allowing the nuclear industry to avoid full compliance simply by claiming to demonstrate they are "SAFE ENOUGH".
 - "Safe Enough" is a highly subjective, unjustified, and unsubstantiated term.
 - These have the potential to cause maloperation of equipment important to safe shutdown.
- NRC has agreed to NOT impose Violations and Fines on the nuclear industry for failing to fully meet fire-induced circuit fault regulations.

"Enforcement Discretion" - Hardly Protective of Public Interests.

From 1998 to date NRC failed to require full compliance, in spite of the potential for disastrous consequences.

NRC recognized risks

- June 3, 1999 NRC documented problems and issued an Information Notice (IN) 99-17, "*Problems Associated with Post-Fire Safe-Shutdown Circuit Analyses*".
- NRC claims "enforcement discretion" is not permanent, but allows "enforcement discretion" to continue to this day. That's unprotective and unacceptable.

Alternative Fire Protection Rule

NRC should not provide a "voluntary" alternative to NRC's more protective fire protection rule.

- NRC allowed less stringent fire safety regulations increasing risk of disaster. NRC put nuclear industry profits ahead of public safety when acquiescing to nuclear industry convenience.
- NRC abandoned more stringent original requirements to endorse NEI and industry developed suggestions for: "Flexibility" - Reduced Regulatory Burdens - Weakened Regulations to Avoid Exemptions.

- NRC reduced so-called “unnecessary regulatory burdens” and “industry exemption requests” to accommodate the nuclear industry and their bottom line.
 - “Flexibility” for nuclear plant owners should be a far lower priority to NRC than insuring public safety. “Flexibility” provides convenience for the nuclear industry and likely improves their bottom line, but it clearly does not provide increased protection against fires.
- NRC can’t even get the industry to comply with weaker regulations.
- NRC is giving the nuclear industry incentives and/or a 6 month extension to follow weaker regulations with which nuclear plant owners should willingly have complied in the past decade or more.
 - NRC provided certain enforcement discretion as an incentive for nuclear plant owners to adopt weaker NFPA 805 requirements than those required under licensing, yet nuclear plant owners are still resisting the weaker requirements.

Fire Barriers

Tests indicated the material used by the nuclear industry for fire barriers may not provide their designed fire rating.

- **1-hour and 3-hour rated Thermo-Lag fire barrier material failed to consistently provide its intended protective function.**
- ✓ NRC publicized conclusions that the fire barrier was indeterminate and began NEGOTIATIONS with the industry for an industry-led resolution, which the industry declined to initiate.
 - ✓ NRC backed down and concluded corrective actions would not be required.

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 at Limerick 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 pool 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. Limerick should close and stop producing such deadly waste for which there is no safe solution.

NRC Jeopardizes Health and Safety Of Limerick Workers and The Public

Since 2006, when Exelon first tried to convince the public that cask storage was safe, NRC and Exelon repeatedly stated 5 years was required to safely remove fuel rods from Limerick's fuel pools, however that 's not what happened at Limerick - at least in 2010:

- ✓ **IMPORTANT POINT - The less cool down time in fuel pools, the thermally hotter and more radioactive the waste - the more risk of internal combustion and an unstoppable radioactive fire.**

Dry cask technical specifications state: **Radiation shielding and thermal heat removal require around 5 YEARS, minimum, cool down time in the pool before transfer to dry casks.**

1. Yet, NRC claimed 1 year storage in the fuel pool at Limerick was sufficient before removal for above ground storage. (June 16, 2006, NRC letter to ACE)
2. NRC again clearly stated cool down time before removal from fuel pools was at least 5 years. (July 13, 2006 at a meeting in Limerick)
3. July 25, 2006 ACE received an e-mail from NRC stating: Cooling time in the pool is: **1 year or 3 years or 5 years.** From: James Trapp - NRC Date: 07/25/06 07:04:34
In our letter to you dated June 16, 2006 we stated the time was at least 1 year. This statement was correct. I received the following information from Randy Hall that should help to clarify our statement.... Most spent fuel that is placed in dry storage must be aged for 5 years or more, as required by all NRC-approved Certificates of Compliance for dry cask storage systems....Purposely using the word most, because there are cask designs, including NUHOMS, that would allow certain low-irradiated fuel to be placed in a cask with only 3 or more years of cooling in the spent fuel pool.

➤ May 6, 2010 - Exelon Employee At A Limerick Open House Said:

- Older and newer "spent fuel rods" are removed from Limerick's fuel pools at the same time. Older rods are stored outside newer rods in assemblies.

NRC Irresponsibly Allows Dangerous Fuel Rod Removal Too Soon At Limerick, To Accommodate Exelon, At Increased Risk to the Region From An Unstoppable Radioactive Fire, and Increased Risk To Workers.

NRC's Pamphlet Proves How Dangerous Nuclear Power Plant High-Level Radioactive Waste Is. Refer to:
U.S. NRC Washington, D.C. Office of Public Affairs Brochure
NUREG/BR-0216, Rev.2`May 2002
Page 7 – How hazardous is high-level waste?

Standing near unshielded spent fuel could be fatal due to the high radiation levels.

TEN YEARS AFTER REMOVAL **OF SPENT FUEL FROM A REACTOR:**

RADIATION DOSE 1 Meter Away From A Typical Spent Fuel Assembly

EXCEEDS 20,000 Rems Per Hour

5,000 Rems Would Be Expected To Cause Immediate Incapacitation and Death within One Week

It appears NRC is jeopardizing worker safety and increasing threats to the public by lowering protections at Limerick so that Exelon can remove fuel more quickly from pools to load dry casks, all to free space in pools for more waste to be generated.

CONTACT YOUR ELECTED OFFICIALS

Ask Them To Take Off Blinders, Review The Attached Information On NRC, Look At Reality Of Risks, Then OPPOSE Limerick Relicensing

Exelon's contributions are buying silence and support at the expense of public health and safety. Our elected officials' opposition could lead to NRC denying Exelon's attempt to further jeopardize our region by running Limerick 20 years longer. ELECTED officials remained silent too long, in spite of overwhelming evidence of threats and harms, NRC negligence, and more provided to them from ACE. 10-22-11 PA Representative Quigley even abandoned public interests by supporting relicensing.

The Alliance For A Clean Environment September, 2011

Alliance For A Clean Environment Concerns, Comments, and Questions

10-26-11

NRC Needs To Independently Evaluate
Limerick Nuclear Plant's
Toxic Assault On The Schuylkill River

RE: Issues From Limerick Nuclear Plant's NPDES Permit Renewal Application

ENOUGH UNSUBSTANTIATED BIASED ASSUMPTIONS!

NRC NEEDS TO PROVIDE INDEPENDENTLY RESEARCHED ANSWERS
IN LIMERICK NUCLEAR PLANT'S UPDATED EIS.

To NRC: ACE is asking NRC to respond to specific issues related to the reality of harms that are obviously significant, but not fully or accurately disclosed. Specific issues on long-term harms and threats need to be independently evaluated and addressed, not with biased industry assumptions yet again, but with independent comprehensive year-long monitoring and testing.

- Almost two million people need and deserve a reliable comprehensive and independent EIS that will honestly and accurately determine the future of their vital drinking water source by 2029, and then another 20 years to 2049.
- NRC needs to respond to issues we raised with DRBC and DEP in January, 2011 (attached) correspondence.
- With inevitable river depletion, toxic concentrations, and an overheated river, NRC needs to address the following in Limerick's UPDATED EIS:
 1. How can a river that already had record low flows in 1999, continue to sustain more extraordinary water use due to uprates and extended years of operation?
 2. Significant inevitable depletion will occur each year, even after supplementation. This will concentrate radionuclides discharged 24/7, including long-lived radionuclides. Will NRC require continuous filtration? Where will the filters that become highly radioactive be stored? Over 5 billion gallons of radioactive, heated wastewater are discharged each year.
 3. What are the long-term consequences of heavy metal and TDS contamination from unfiltered mine water pumping into the river for supplementation to operate Limerick?
 4. What happens to the river and public drinking water for almost two million people if massive amounts of water become necessary to attempt to prevent a meltdown or explosions in the fuel pools such as we witnessed in Japan? We don't have an endless ocean to try to contain such an event or to attempt to dilute the deadly radioactive run-off, but Limerick is 3rd on the earthquake risk list.

VERY CONCERNING: The first EIS was based on meaningless self-serving "ASSUMPTIONS" made by PECO, the owner, before Limerick ever started to operate. How will NRC accurately determine all the future long-term harms to the Schuylkill River, in relation to relicensing from 2029 to 2049, when past and present harms are based largely on biased "assumptions" by the owner from before Limerick started operating and biased self-serving data and reporting ever since Limerick started operating?

NRC does not actually know the full and accurate extent of harms over the past 25 years. How can harms be accurately predicted from now until 2029 when Limerick's license expires, much less 20 years more?

Since 2006, ACE has been requesting DRBC to do independent monitoring, testing, and reporting before approving Exelon's destructive docket requests which will allow drastic increases in harms and threats.

Over 350 billion gallons of extremely hazardous effluent have been discharged into the Schuylkill River, yet there is:

1. NO study on the additive, cumulative, and synergistic harms.
2. NO independent comprehensive long-term monitoring, testing, and reporting to determine actual harms.

This is UNACCEPTABLE! Harms are obvious, yet never comprehensively measured and evaluated.

➤ **If there is no money to do what is necessary to independently determine all actual harms to date, to more accurately predict the future, then the PRECAUTIONARY PRINCIPLE should be used and Limerick should NOT be relicensed.**

ACE IS ASKING NRC TO COMMENT ON EACH ISSUE BELOW:

By 10-26-11 - Neither DEP nor DRBC has responded to issues in the January, 2011 ACE correspondence to DEP and DRBC below:

BEFORE Limerick ever started operating in 1985, PECO make self-serving "**assumptions**", that have NEVER been independently verified by anyone, then or now.

PECO's 1984 ASSUMPTIONS regarding waste water effluent, have been submitted to PA DEP for this 2011 NPDES Permit Renewal. ASSUMATIONS prior to starting Limerick Nuclear Power Plant operations cannot be used as verifiable evidence of harms to the Schuylkill River today in 2011, 25 years after operation.

- Effluent flow rates, dilution factors, and temperature rises for the discharge plume are based on assumptions prior to operation, and not on actual continuous data related to actual discharges over the past 25 years. Assumptions about monthly cooling towers blowdown temperatures cannot be used to accurately determine exceedances of limits. Monthly averages ignore both spikes plus additive and cumulative harmful impacts over time.
- Exelon's application for Limerick's 2011 NPDES permit renewal illogically includes a 27 year old document produced prior to Limerick even operating. Pages from the 1984 document below, included with Exelon's NPDES permit application, are not relevant to conditions in 2011. Unsubstantiated and even meaningless conclusions in the pages included from PECO's 27 year old document are unreliable to assess harms from both thermal and toxic chemical harmful impacts to the Schuylkill River over the past 25 years.

April 1984

8404170288 840430 PDR ADOCK 05000352

Final Environmental Statement

Related to the Operation of Limerick Generating Station - Units 1 and 2

Docket Nos. 50-352 and 50-353 - Philadelphia Electric Company

U.S. NRC - Office of nuclear Reactor Regulations

BEFORE Limerick ever started operating in 1985, PECO make self-serving "assumptions", that have NEVER been independently verified by anyone, then or now.

1. Blowdown Rate - PECO said, "*The blowdown flow rate has been determined to vary.... One-half to one-third of the river flow will pass over the diffuser. It has been ... ASSUMED that the effluent will have become diluted in one-third of the river flow.*"

ACE Questions and Request:

- A. **How can DEP rely on PECO's assumption from 1984? Limerick depleted the river flow. Wouldn't the ratio and harmful impacts from the discharge change?**
- B. **After 25 years of Limerick's operation depleting the river while continuing to poison it with long-lived radionuclides and other toxic contamination, the public needs an independent study, evaluation, and explanation.**
2. Biological Effects of the Heat Dissipation - was based primarily on guesswork by PECO's consultant, not actual operations. DEP permitting should be based on current scientific independent monitoring and data, not outdated biased conclusions by PECO, from before Limerick Nuclear Plant started operating.

ACE Comments, Question, and Request

- A. **After 25 years of operation, the public needs and deserves an independent study to determine actual biological effects from heat dissipation. Unless there is independent monitoring during heat and drought conditions, actual biological effects of heat dissipation related to Limerick discharges cannot be accurately determined. It is irresponsible for PA DEP to rely on PECO's 1984 assumptions of dilution to determine conclusions about biological effects from heat dissipation.**
- **ACE requests PA DEP to withhold Limerick's NPDES permit until after the summer of 2011. We urge DEP to obtain funding from DRBC's collection of money Exelon pays for use of the Schuylkill River, to hire truly independent river water scientists, to evaluate biological effects during extreme heat and drought periods over the summer of 2011.**
- B. **Over the past 25 years of Limerick operation, has DEP or any other agency ever done an independent scientific study on the actual biological effects of heat dissipation over time from Limerick Nuclear Plant's discharges?**
 - ✓ PECO's 1984 assumptions about temperature are based on river flow over the diffuser which changed over 25 years.
 - ✓ Exelon is bragging about far higher production rates, which should be expected to be producing more discharges. Actual operations with increased discharges with lower flows in the river should significantly change 1984 assumptions.

✓ There is no verifiable or justifiable proof related to PECO's 1984 document conclusions:

- *"The river flow is relatively shallow at and immediately below the discharge so that rapid mixing would be EXPECTED. The predicted temperature rise values are below DRBC surface temperature excess for all but the severe case."*

Extreme heat and drought conditions since Limerick started operating (including last summer), along with significant depletion caused by Limerick since 1985, could have created the conditions for many severe cases when Limerick violated permit limits, but DEP has no way to prove when or how long permit violations are occurring.

- *"The Limerick discharge is EXPECTED to be in compliance with the applicable limitations because the river channel widens downstream of the discharge and is available for mixing." Even if PECO's expectations on limitations were close to being accurate, the same mixing ratio are in 1984, clearly no longer exists now in 2011, after hundreds of billions of gallons of depletion.*

C. MIXING ZONE - DER did not specify a mixing zone condition for Limerick in the Water Use Approval D-69-210 CP (Final).

- **Without actual independent verification after Limerick operations started or since, DEP should not be using DRBC's unsubstantiated conclusion that Limerick's wastewater discharge is not increasing the natural temperature (during the 1961-66 period) by more than 5 degrees F., nor that Limerick's discharges are not increasing the stream temperature above 87 degrees F, except within the assigned heat dissipation area (consisting of 1/2 the stream width and 3500 feet downstream from the discharge point.**

- **Evidence suggests that conditions have changed significantly. Decades old conclusions based on assumptions prior to operation should not be used for current permitting decisions. Is it DEP's position that Limerick's heated discharges have no impact on Schuylkill River water temperatures downstream?**

➤ **We urge DEP to take a closer look at potential consequences of simply ignoring what is clearly an increasing threat, especially during heat and drought conditions.**

➤ **For example, June 2010 Schuylkill River water temperature was deemed too hot for safely holding a swimming event, in Philadelphia, just over 20 miles downstream, One student died swimming in the Schuylkill River. DEP's decisions about Limerick's thermal discharges can have severe consequences in the future, on public health and ecosystems.**

- **The Schuylkill River water temperature became so hot last summer that Limerick cut power on many days. Check NRC's website for details.**

➤ **What are the implications of Limerick's yearly billions of gallons of heated waste water discharges into a continuing depleted water source, year after year for decades more?**

➤ **Will heated discharges increase due to Limerick's Uprates?**

- **DER has no independent proof of what is happening as a result of Limerick's thermal discharges.**

✓ Without actual independent verification at any time after Limerick operations started, DEP has used DRBC's unsubstantiated conclusion that Limerick's heated wastewater discharges would

not increase the natural temperature (during the 1961-66 period) by more than 5 degrees F., nor increase the stream temperature above 87 degrees F, except within the assigned heat dissipation area (consisting of 1/2 the stream width and 3500 feet downstream from the discharge point).

- ✓ For this permit renewal, we request that DEP independently validate such assumptions.
- 5.1.1.2 Effluent Limitations - EPA recommended thermal effluent limitations for steam electric sources such as Limerick. However, limitations are based on complicated exceptions and requirements that clearly are not independently verified by DEP nor EPA.
 - ✓ We suspect DEP has no idea whether Limerick's thermal effluent is actually within the limit specified. If that is incorrect, please explain how DEP actually verifies the limit is not exceeded.
- 3. Schuylkill River - In 1984, prior to Limerick starting operations, PECO claimed "**only minor impact is EXPECTED** on all biotic components as a result of intake operation and thermal discharge."

ACE Comment and Questions:

- A. Public hearing comments, prior to Limerick being built, suggest many others did not "EXPECT" Limerick's extraordinary Schuylkill River water intake to have only minor impacts to the Schuylkill River flow. In fact, there was great concern that the Schuylkill River could not continue to sustain the extraordinary water needs of Limerick Nuclear Power Plant. Evidence suggests the river cannot continue to safely sustain such yearly depletion. We suspect this is one reason PA DEP and others are irresponsibly condoning unfiltered contaminated mine water pumping into the river for supplementation to operate Limerick.
- B. Limerick withdraws over 20 billion gallons of Schuylkill River water each year and only returns 5 billion. Supplementation each year seems to have been 3 billion gallons or less. That amounts to hundreds of billions of gallons of Schuylkill River depletion over 25 years.
 - ✓ Does DEP consider that MINOR impact to the Schuylkill River flow?
 - ✓ When issuing an NPDES Permit does DEP factor in:
 - More water use for Limerick Uprates?
 - How many more years the Schuylkill River can sustain this kind of depletion and still provide public water for all other business and residents from Pottstown to Philadelphia?

4. CHEMICAL EFFLUENT EFFECTS 5.3

5.2.1 Physical effects

- **Extremely Dangerous Toxics are Discharged into the Schuylkill River Through the Diffuser, Including Radiation and Other Toxic Chemicals from the Following Sources All Mixed Together:**
 - ✓ Cooling Tower Blowdown
 - ✓ Spray Pond Ovefflow
 - ✓ Treated Radwaste
 - ✓ Treated 'Sanitary' Waste
 - ✓ Holding Pond Effluent
- This document states cooling tower blowdown accounts for more than 99 percent of the flow rate and heat content of the total discharge.

- PECO claimed the diffuser would cause rapid dilution of the effluent in the Schuylkill River. An ESTIMATE was used to claim the effluent would become fully mixed in the portion of the river which passes over the diffuser and was based only on a laboratory MODEL study of submerged diffusers in shallow water.
 - It was determined in an average flow, the initial mixing zone for all these hazardous chemicals would be about:
 - ✓ 150 feet wide (1/2 a football field)
 - ✓ 30 feet long (10 yards of a football field).
 - River flow initial mixing zone
 - ✓ Average flow - About .1 Acre
 - ✓ High flow - About .5 acre
 - In a high river flow, dilution of the effluent was estimated to be much greater, but the mixing zone would extend downstream 150 feet.

**The Following List (3-21-11 to 10-6-11) Of
News and Report Titles Reveal NRC's Negligent Policies and Decisions**
For Details Contact ACE

Overwhelming Evidence Of NRC's:

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

03/21/11

NRC INCREASES ESTIMATED RADIATION "BACKGROUND" DOSES AGAIN

03/25/11

Report: Defects At U.S. Nuke Plants Not Reported

04/05/11

"NRC's Pro-Nuke Spin on Evacuation Zones,"

04/18/11

U.S. Nuclear Regulator a Policeman or Salesman?

04/22/11

U.S. Nuclear Regulatory Commission Oversight Called Too Lenient

04/22/11

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

04/27/11 Rolling Stone Magazine article,

“America’s Nuclear Nightmare”, documents that the NRC is “little more than a lap dog to the nuclear industry”.

05/7/11

Nuclear Agency Is Criticized as Too Close to Its Industry

05/22/11

Jaczko [NRC Chairman] says NRC has nothing on station blackout "into the longer, longer time frame"

05/24/11

NRC Exempts Nuclear Power Plant Security

06/02/11

Some Fear U.S. Nuclear Agency Is Playing 'Regulatory Roulette'

06/16/11

NRC Hearing Raises Questions About Safety At Nuclear Plants

06/16/11

"Nuclear Never Safe" - Direct Communication to NRC & US Senate

06/27/11

New Exposé Reveals Nuclear Regulatory Commission Colluded With Industry To Weaken Safety Standards

06/27/11

Fudging Nuke Numbers

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"

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.

07/29/11

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

07/30/11 UPDATE:

US Nuclear Industry Group Backs 5-Year Timeline For Safety Changes....who's in charge

08/30/11

NRC: Update evacuation plans near nuclear plants. 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.

09/02/11

Nuclear Energy Advocates Insist U.S. Reactors Completely Safe Unless Something Bad Happens

09/05/11

NRC Exemptions, aka "No Significant Hazards"

09/11/11

Agencies Struggle To Craft Offsite Cleanup Plan For Nuclear Power Accidents 11/10/10

- **While, no agency is taking responsibility for attempting to clean up after a nuclear disaster, all these agencies ignore or miss the fact that nuclear "accidents" NEVER end.**

10/05/11

NRC COMPLACENT ABOUT EARTHQUAKE RISKS

10/06/11

**NRC COMPLACENT ABOUT TERRORIST ATTACKS ON THE
U.S. ELECTRIC GRID - AGENCY SAYS THEY ARE NOT
RESPONSIBLE!**

**FOLLOWING IS ACE TESTIMONY
SHOWING WHY NRC NEGLIGENCE ALREADY
JEOPARDIZED OUR FUTURE
AND WHY
IT WOULD BE UNACCEPTABLE
FOR NRC TO RELICENSE
LIMERICK NUCLEAR PLANT.**

To: Nuclear Regulatory Commission (NRC)

From: Alliance For a Clean Environment (ACE)

Date: September 22, 2011

**Subject: Comments About Limerick Nuclear Power Plant's
Environmental Impacts; Docket I.D. NRC-2011-0**

The Alliance For A Clean Environment conducted an 11 year investigation of the harms and threats from Limerick Nuclear Power Plant. The body of evidence confirms unprecedented environmental and meltdown threats posed by this plant. One event, one worst case scenario, can trigger a catastrophe of unthinkable proportions. Whether a natural disaster or terrorist attack occurs, by relicensing Limerick, NRC would be playing Russian Roulette with the lives of over 8 million people. NRC must close Limerick Nuclear Plant by 2029.

There is no way for either NRC or Exelon to insure the safety of the environment or the residents impacted by Limerick Nuclear Power Plant. It cannot be made failsafe. No other facility has the potential to render the entire region uninhabitable, possibly for centuries, as the result of an accident or terrorist attack. This is the highest risk facility that could exist in any community.

Current 40-year operating licenses will expire in 2024 and 2029. Why the rush to renew this license now? We urge NRC to say no to Exelon's requested license renewals. The public was led to believe that Limerick's generators, fuel pools, and miles of underground pipes and cables could operate safely for 40 years, and then the facility would close.

Is Exelon fearful that the longer they wait, the more serious problems may arise? After only 26 of 40 years, numerous signs of aging and risk have been identified:

- Corrosion, deterioration, fatigue, cracking, thinning with loss of material, and loss of fracture toughness are all documented in Exelon's own renewal application for Limerick, in the "Aging Management" section.
- Instances of equipment fatigue and cracking of vital equipment include the reactor vessel and coolant system.
- Aging equipment after only 26 years suggests NRC should not just close the plant by 2029, but also increase their oversight vigilance during the remaining 18 years of the current license.
- In the past few years, Limerick has had numerous unplanned shutdowns, suggesting there are already significant problems. Three occurred in one week in June 2011.
- Loss of coolant, leaks, and accidents at Limerick have already been documented. Serious radioactive contamination could go undetected and unreported for years from the corroding, deteriorating, aging miles of underground, hard to monitor pipes, cables, and connections.
- There have already been two "near misses" at Limerick from 1996 to 2001.

This aging and failing plant is an accident waiting to happen. Limerick Nuclear Plant is a ticking time bomb. Large volumes (over 6,000 assemblies weighing more than 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. This plant will produce about two more tons of dangerous spent fuel rods every year that it operates. 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. In addition, Limerick is now third on the earthquake risk list for nuclear plants in the United States.

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. 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.

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.

Exelon, Limerick's owner, is shamelessly asking to run Limerick harder through uprates and longer with relicensing. If approved by NRC, both would increase Exelon's profits, but both will also drastically multiply our already extraordinary environmental harms and threats.

As long as Limerick operates, harms to us and our environment will increase. Limerick's harmful environmental impacts are unprecedented. After an 11 year investigation by ACE on Limerick's routine radiation releases, plus permits for major air pollution and all kinds of dangerous water contamination, it is clear that Limerick's energy is not just dirty, it's filthy.

Evidence compiled by ACE revealed alarming facts involving Limerick Nuclear Plant's:

- Routine Radiation Releases Into The Region's Air
- Radioactive Wastewater Discharges into the Schuylkill River, 24 hours a day, 365 days a year
- Radioactive Groundwater Contamination
- Radionuclides Associated with Limerick's Operations Detected In Our Soil, Sediment, Vegetation, Fish, Water, and Milk.
- Research Confirmed Radiation In Our Children's Baby Teeth
- Major Air Pollution Under Health Based Standards of the Clean Air Act - 32 Sources Listed
- Drastic Harmful Increases Permitted In Particulate Matter (PM-10) From Limerick's Cooling Towers - Other Air Pollution Increases Also Permitted
- Dangerous Depletion of the Schuylkill River, A Vital Drinking Water Source for Almost Two Million People from Pottstown to Philadelphia. Depletion Will Continue As Long As Limerick Operates.
- Contaminated Unfiltered Mine Water Pumped Into The Schuylkill To Operate Limerick
- Alarming Cancer Increases, Far Higher Than The National And State Averages, After Limerick Started Operating Until the Late 1990s
- Infant and Neonatal Mortality Rates Far Higher Than The State and Large Nearby Cities

The findings of our investigation lead us to conclude that the Limerick Nuclear Plant is nothing less than a Recipe for Disaster.

NRC stated possible alternatives to license renewal include either no action or reasonable alternative energy sources. Neither alternative has been used by NRC anywhere in the U.S. to date. The NRC has become a rubber-stamp approval agency for the nuclear industry. The process is obviously deeply flawed.

It is no longer acceptable to perpetuate dangerous 20th Century technology that can cause catastrophic damage, when safe alternatives exist now. We are deeply concerned about the health and safety of area residents and employees working at Limerick. Less dangerous jobs can easily be provided with safer, cleaner sources of energy. Before Limerick's current license expires in 2029, the power produced at Limerick could be replaced by a combination of energy efficiency, conservation, and safe, clean renewables such as solar and wind power. NRC should decline Exelon's renewal request based on the availability of alternative energy sources. A solar park on the 267 acre Occidental Chemical Superfund Site could provide one viable, major component of a replacement clean energy plan.

While NRC is required to prepare a supplement to Limerick's Environmental Impact Statement for license renewal, ACE has no confidence in this process based on NRC's history of approving every renewal request to date, regardless of documented risks, threats, and harms.

It would be both unethical and immoral for NRC to relicense Limerick. Every year Limerick operates, more radiation will get into our environment and us from Limerick's routine radiation releases. Independent research verifies that there is no safe dose of radiation exposure. Area residents have already suffered

from a well documented health crisis, with alarming cancer increases, especially in children, since Limerick began operating in 1985. More people will suffer, get cancer, and other serious diseases and disabilities associated with Limerick's routine radiation emissions and other dangerous toxics. There is an enormous body of research and medical evidence linking radiation to numerous cancers, leukemia, and genetic damage.

Many environmental factors have changed dramatically since 1985 in this region. The population increased by 183% from 1980 to 2010, according to U.S. Census data. More than eight million people now live within a 50 mile radius of Limerick Nuclear Plant. The current evacuation plan is fundamentally inadequate and seriously flawed. If activated due to a nuclear event, the evacuation plan is likely to result in guaranteed gridlock on major highways such as Route 422 and Route 100, widespread confusion, and unprecedented disaster. A review and complete revision of the outdated evacuation plan, to reflect and accommodate realistic current and projected conditions and demographics, must be an integral part of NRC's license review process.

Germany, Italy, and Switzerland have already decided to abandon dangerous and environmentally harmful nuclear power. In the U.S., officials from Vermont, New York, New Jersey and California have spoken out to protect their citizens.

NRC's shameful record of weakened regulations, relaxed standards, ignored violations, reliance on monitoring and reported data supplied by nuclear plant operators, and lax oversight has been well documented in a 2011 scathing indictment by the Associated Press. NRC has also been characterized as a lapdog for the industry they are supposed to regulate, rather than a watchdog protecting the public. In May 2011, NRC admitted they have done no sampling or testing at Limerick. All monitoring, testing, and data reporting have been controlled by Exelon. The fox has been in charge of the henhouse for the past 26 years.

It is long past time for the NRC to summon the courage to do the right thing, and actually protect the environment and the public, rather than promote corporate interest and the nuclear industry. The Precautionary Principle states, "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." The proponent of an activity, rather than the public, should bear the burden of proof.

Today, September 22, 2011, I am submitting for the record, summary packets of our research on Limerick's major air pollution, harms to the Schuylkill River, radioactive groundwater contamination, links between Limerick's radiation and our elevated cancers, and how Limerick's nuclear power can be replaced with safer sources now. Based on the compelling body of evidence of environmental harms to date, and the enormous increased population in proximity to the facility, Limerick Nuclear Plant must be closed by 2029. There is no amount of energy production that is worth risking the lives of so many people.

Dr. Lewis Cuthbert
ACE President

The Alliance For A Clean Environment (ACE)

1189 Foxview Road

Pottstown, PA 19465

October 26, 2011

To: U.S. Nuclear Regulatory Commission (NRC)

Lisa Regner, License Renewal
Mailstop TWB-05-BO1 M
Washington, D.C. 20555

Re: Limerick License Renewal NRC I.D. Docket 2011-0166

The Alliance For A Clean Environment (ACE) has been investigating environmental and health threats and harms associated with Limerick Nuclear Power Plant for over 11 years. We compiled a body of research and evidence which shows Limerick Nuclear Plant's harms and threats seriously jeopardize our environment and public health. The evidence is clear. The only way to protect the health and safety of our environment and residents of our region is to close Limerick Nuclear Plant, not relicense it.

ACE is providing NRC with a detailed summary of our extensive investigation. We request:

- 1. That NRC respond in writing by e-mail to: aceactivists@comcast.net, to each concern, question, request, and conclusion, at least 60 days prior to the next public hearing on Limerick's Environmental Impact Statement.**
- 2. That this document and attachments be placed into the official public hearing record, in addition to our comments at the 9-22-11 public hearing, for Limerick Nuclear Plant's Environmental Impact Statement. We ask that all be placed on NRC's website.**

In the past five years, ACE reviewed several of Limerick Nuclear Plant's permits to pollute. They clearly threaten public health and the environment. Exelon requested SIGNIFICANT POLLUTION INCREASES in three of the permits listed below.

- ✓ Exelon's Radiological Monitoring Reports for Limerick's routine releases of radionuclides.
- ✓ Limerick Nuclear Plant's Title V Air Pollution Permit Renewal Under Health Based Standards of the Clean Air Act.
- ✓ Limerick Nuclear Plant's NPDES Permit to release radionuclides and a broad range of other toxics into the Schuylkill River, a vital source of drinking water for almost 2 million people from Pottstown to Philadelphia.
- ✓ Exelon's Docket Request to the Delaware River Basin Commission to pump unlimited unfiltered contaminated mine waters into the river to supplement the flow to operate Limerick. Exelon also requested to reduce low-flow restrictions, eliminate temperature restrictions, reduce monitoring, and eliminate public participation.

For a credible EIS, all of Limerick's harms and threats to public health and the environment must be evaluated in total. NRC must estimate total harms from all continuous pollution threats our region faces from Limerick Nuclear Plant operations, past, present, and future, including the increases Exelon requested. Threats are additive, cumulative, and synergistic. Our region is not exposed to just one radionuclide at a time or one hazardous chemical released at a time from the broad range listed in

Limerick's pollution permits. We are continuously exposed to all of them together over time. "Permissible" levels in a pollution permit clearly does not mean it's safe or harmless.

For NRC's Environmental Impact Statement to be considered credible, NRC must consider all Limerick Nuclear Plant's threats and harms to public health and safety and the environment, in total, regardless of which agency issues the permits. Unless the additive, cumulative, and synergistic harmful health impacts from all routes of exposure are considered for ALL radionuclides, and other toxics are evaluated for their health harms to public health, our community will reject NRC's Environmental Impact Statement for Limerick Nuclear Plant and consider it:

➤ **Incomplete, Unreliable, and Invalid**

**WHY NRC's CREDIBILITY IS SUSPECT FOR
LIMERICK NUCLEAR PLANT'S ENVIRONMENTAL REVIEW PROCESS:**

We have concerns that NRC's Environmental Review process will be an industry biased sham. Our concern is based on comments made by Lisa Regner 9-22-11. Ms Regner, the NRC person in charge of Limerick's review, before even reviewing information from Limerick's air and water pollution permits, asserted that NRC didn't deal with that kind of pollution. That is NOT acceptable. Our region's residents are exposed to it every day because of Limerick Nuclear Plant's operations.

During Ms. Regner's comments at the 2:00 P.M. meeting she said, "***We need you (the public) to provide regional specific environmental facts to us – to do a thorough, comprehensive, environmental review.***" (On Video)

- But, when ACE officers tried to explain some important facts about Limerick's major air pollution and serious threats to drinking water, using our charts, Ms. Regner asserted that NRC doesn't deal with that kind of pollution.
- Unless all of Limerick's air pollution and water contamination threats to public health are evaluated, how could anyone possibly consider partial information to be a thorough, comprehensive environmental review?

Neither ignorance of the risk, nor fractured permitting between agencies, are acceptable excuses for NRC to ignore and dismiss major threats to public health and the environment when developing an updated Environmental Impact Statement for Limerick Nuclear Plant.

People in our region are continuously exposed to the additive, cumulative, and synergistic harmful health impacts of ALL of Limerick Nuclear Plant's radionuclides, plus the broad range of hazardous pollutants from Limerick into our air and water.

Unfortunately, our region's residents are exposed to all of Limerick's harmful hazardous releases, not just those NRC chooses to deal with. If NRC fails to include all pollution

threats in Limerick's EIS, this costly NRC review will be considered a sham done only to rubberstamp Limerick's relicensing.

NRC statements during the public hearing on Limerick's EIS 9-22-11 in italics - (verified on video)

1. *"the primary focus is to maintain public health and safety"*

- **ACE believes that NRC attempting to ignore major air pollution and water contamination threats from Limerick Nuclear Power Plant does not begin to maintain public health and safety. If fact, it abandons public health and safety.**

2. *"Purpose of NRC's review is to determine if environmental impacts are reasonable"*

- **"Reasonable" is an unacceptable, subjective evaluation that would be made by people in an agency that has been shown NOT to be objective, but instead biased toward the nuclear industry. What is reasonable to NRC is absolutely unreasonable to so many people around Limerick, especially children, suffering from huge increases above the national averages, for a broad range of environmentally linked diseases and disabilities.**

3. *"The supplement EIS specific to Limerick could change the conclusions in the generic impact statement."*

- **If NRC refuses to deal with specific Limerick pollution threats provided by those who reviewed Limerick's permits and refuses to look at the additive, cumulative, and synergistic harms, how could the generic impact statement possibly change for Limerick?**

THERE ARE COMPELLING LINKS BETWEEN LIMERICK NUCLEAR PLANT'S ROUTINE RADIATION RELEASES AND CANCER

After Limerick Nuclear Plant started operating in 1985 to the late 1990s, documented cancer registry data provides evidence showing skyrocketing cancer rates (far higher than the national average), especially in children, in communities near Limerick and the county.

- ACE reviewed four Cancer Studies using PA Cancer Registry Data and/or data from the CDC website that all show elevated cancer rates around Limerick.
- ACE collected a body of independent research and other evidence suggesting Limerick Nuclear Plant had to be a major factor in the highly elevated cancers around it.

Links between elevated cancers around nuclear plants are obvious and already documented.

- ✓ Nuclear plants like Limerick routinely release a broad range of radionuclides into the air and water around them,ⁱ
- ✓ Radiation exposure can lead to cancer at any level.ⁱⁱ

- ✓ After a nuclear plant like Limerick starts operating and continuously releasing a broad range of radionuclides into the air and water, people in the region are continuously exposed to additive, cumulative, and synergistic doses of that radiation from all routes of exposure.
- ✓ Long-term exposure to the witches brew of radiation from nuclear plants like Limerick logically causes increases in cancers around it.
- ✓ Limerick Nuclear Plant is clearly a major factor in the shocking cancer increases around Limerick Nuclear Plant since it started operating.

NRC LOST CREDIBILITY

NRC officials made unsubstantiated claims and conclusions to dismiss and even deny a link between Limerick Nuclear Plant's routine and accidental radiation releases into our air and water and the skyrocketing documented cancer increases far above the national average, especially in children, and those cancers most specifically linked to radiation exposure.

- NRC'S PREDETERMINED CONCLUSIONS ARE SHAMELESS AND ARE NOT CREDIBLE.

10-22-11 In Pottstown, NRC's Lisa Regner inaccurately claimed cancer data on charts and handouts prepared for NRC's public meeting by ACE were anecdotal.

- **Cancer Data was NOT anecdotal. Documented cancer data increases were in fact based on PA Cancer Registry Data and Data from the CDC Website**

It's NOT credible for NRC employees to assert that Limerick's routine radiation emissions are not a major factor in the documented highly elevated cancers around Limerick, especially in children.

Lisa Regner (NRC) made other irresponsible and inaccurate statements showing NRC's INACCURATE PREDETERMINED BIAS about links between cancer and nuclear plant radiation.

Additional unsubstantiated claims 9-22-11 from Lisa Regner to ACE officers include:

- ✓ **Unsubstantiated claims that Limerick's radiation releases were so small there was no harm.**
 - In reality, Ms. Regner, nor anyone else, knows the full extent of actual radionuclides routinely and accidentally released into the air, water, soil, or vegetation from Limerick Nuclear Plant. We rely on incomplete, deceptive data and reports controlled by Exelon, the company with a vested interest in the outcome that has shown it can't be trusted.
 - NO INDEPENDENT AGENCY EVER DID THE YEAR-LONG MONITORING, TESTING, AND REPORTING AT LIMERICK, FOR ALL RADIONUCLIDES FROM ALL ROUTES OF EXPOSURE ASSOCIATED WITH LIMERICK OPERATIONS.
 - NRC never took one sample at Limerick, a fact admitted by NRC's Paul Krohn 5-18-11.
 - Regner pointed to PA DEP radiation monitoring which realistically cannot be used to claim to know the full extent of releases, much less spikes. PA DEP does NOT monitor or test for all radionuclides associated with Limerick Nuclear Plant operations, and fails to accurately track and report releases 24 hours a day.
- ✓ **Ms. Regner ignored discussion of other cancer studies also showing elevated cancer rates, especially in children around nuclear plants.** Regner even dismissed the cancer study around German nuclear plants showing highly elevated cancers in children, which led to Germany calling to close all their nuclear plants.

5-18-11 In Limerick, NRC's Paul Krohn Also Made Inaccurate, Unsubstantiated, Deceptive Claims, Discounting Independent Scientists and Research.ⁱⁱⁱ

1. Paul Krohn, NRC's Branch Chief for Limerick claimed "There is no research to show health problems. NRC cannot specifically tie cancer studies...around nuclear power plants to them."^v

- **THAT IS NOT TRUE! Many Studies Show Links Between Nuclear Plants and Cancer.**

U.S. and European studies, as well as four studies on PA Cancer Registry cancer data around Limerick^v, show increased cancers, especially in children,

2. **Strontium 90 (SR-90) in Baby Teeth Is The Smoking Gun.**

The Radiation and Public Health Project's "Tooth Fairy Study" verified Strontium-90 radiation in the baby teeth collected from children around Limerick Nuclear Plant. (Reported 2003).

- Limerick Nuclear Plant's role in SR-90 in baby teeth around Limerick is clear.
- Strontium-90 was routinely released into our air and water from Limerick Nuclear Plant since 1985.
- SR-90 was detected around Limerick in water, milk, soil, and vegetation (2009 Exelon Report).^{vi}
- SR-90 was detected in the teeth of children living in the region around Limerick, at some of the highest levels around nuclear plants studied in the U.S.
- Limerick Nuclear Plant's 26 years of SR-90 releases were obviously the major factor. Still, 5-18-11, NRC's Branch Chief, Paul Krohn blamed 50-year old bomb testing stating, "Bomb testing didn't stop that long ago – from a scientific perspective SR-90 in teeth is from bomb testing." It is NOT credible to blame decades old bomb testing far distances from Limerick for SR-90 found in baby teeth in the region around Limerick, when Limerick routinely released SR-90 since 1985.

Background Radiation Levels Were Drastically Increased After Chernobyl/Japan Disasters. Pre-

Chernobyl:	80 to 100 Millirems Per Year		
After Chernobyl:	360	Millirems Per Year	
After Japan:	620	Millirems Per Year	

➤ **SEE ATTACHMENTS: 1. NO SAFE DOSE PACKET 2. ACE LETTER TO NRC ON STANDARDS**

Still, NRC Shamefully Dismissed the Obvious Role of the Chernobyl and Japan Nuclear Disasters In Drastic RADIATION BACKGROUND INCREASES. 5-18-11 NRC's Paul Krohn asserted nuclear disasters didn't cause increases saying, "a lot of that is ...cosmic rays. Background increased by living changes – add to what people receive each went to about 620 from about 300." When challenged by residents, NRC's Richard Barkley responded, "NRC didn't assert it was safer. That's just reality."

In essence, NRC legally sanctioned increased radiation health harm to our region, 3-16-11, days after the Japan disaster.^{vii} Why? Exelon will not have to report on radiation detected for Limerick samples, if they are under 620 Millirems Per Year. That is both deceptive and dangerous. When independent scientists and physicians admit there is no safe level of radiation exposure, detection levels for Limerick monitoring should be zero.

So called "Safe Dose Limits", are arbitrary, deceptive, and clearly NOT PROTECTIVE. Debate inside EPA sparked "hot dissent" on a plan to radically hike post-accident radiation in food and water. Example: Proposed New Guidance would allow clean-up levels that exceed MCSs under the Safe Drinking Water Act by a factor of 100, 1000, and in two instances 7 million. EPA Public Employees for Environmental

Responsibility (PEER) said, "We all deserve to know why some in EPA want to legitimize exposing the public to radiation at levels vastly higher than what EPA officially considers dangerous."

We need NRC employees with courage and integrity to speak up to protect health, like those at EPA.

NRC should stop making bogus comparisons between continuous nuclear plant radiation releases and exposure to gamma rays from x-rays and planes. That is deceptive for so many reasons.

NRC officials refuse to consider the vast body of independent research showing links between nuclear plant radiation releases and cancer.

- NRC must stop remaining in denial of a body of documented independent research.
- NRC must stop using industry biased unsubstantiated conclusions, to protect nuclear industry interests.
- NRC is involved in a cover-up; a dismissal and/or distortion of the effects of radioactivity from nuclear plants, even regarding the actual harms and deaths from Chernobyl and TMI.
 - ✓ Chernobyl - Almost a million people worldwide died from radioactivity discharged after the 1986 Chernobyl accident, yet NRC continues to use inaccurate low numbers. Research confirms many terrible diseases and disabilities are tied to Chernobyl.^{viii}
 - ✓ TMI – That 1979 accident in PA may be responsible for thousands of deaths. "Deadly Deceit: Low Level Radiation - High Level Cover-up" suggests between 50,000 to 100,000 EXCESS DEATHS occurred after the TMI accident.^{ix}

Dr. Jeffrey Patterson, Professor Emeritus, University of Wisconsin's School of Public Health and Past President of Physicians for Social Responsibility says:

- "Background Radiation" is NOT safe. We live with background radiation, but it does cause cancer".
- "There are absolutely no safe levels of radiation. Adding more radiation ADDS to the health impacts".
- "Exposure to radionuclides...increases risk of cancer.
- "Every effort must be taken to minimize radionuclide content in food and water."

Dr. Steven Wing, University of North Carolina in Chapel Hill, School of Public Health said:

"Generally accepted thinking is that there is no safe dose in terms of cancer or genetic effects of radiation. The claims of no threat to health...just flies in the face of all the standard models and all the studies that have been done over a long period of time of radiation and cancer".

Dr. Chris Busby, Scientific Secretary of the European Committee on Radiation Risk said, if one plans on living a long, healthy life, the most obvious way is to reduce radiation exposure. Dr Busby's Book, "Radiation Toxicity Syndrome" focuses on harms from radiation exposure.

NRC'S CANCER STUDY AROUND NUCLEAR PLANTS WILL BE A DECEPTIVE TOOL USED BY NRC AND THE NUCLEAR INDUSTRY TO DENY WHAT IS ALREADY PROVEN AND OBVIOUS, JUST LIKE STUDIES DONE BY THE TOBACCO INDUSTRY.

NRC's industry biased blind denials 5-18-11 and 10-22-11 confirm our conclusion that NRC will not be objective in a cancer study around nuclear plants - that the real objective is to support NRC's baseless claims. We predict the outcome will deny links to support NRC and industry denials, just like studies done by the tobacco industry for years.

- **SEE ATTACHMENT 4-21-10 Letter From ACE to Gregory Jaczko, NRC Chairman Related to: NRC Cancer Study Around U.S. Nuclear Plants. - ACE concludes NRC's Cancer Study is being done to give NRC and the nuclear industry a tool to claim there is no link.**

Cancer Is Not The Only Elevated Health Problem Near Limerick

A 2003 EPA report on state data reveals far higher numbers around Limerick Nuclear Plant, than Philadelphia, Reading, and the state average for:

- ✓ Infant and Neonatal Mortality
- ✓ Malignant Tumors
- ✓ Lower Respiratory Disease
- ✓ Cerebrovascular Disease

Radiation and Other Toxics In Limerick's Air Pollution and Water Contamination Can Cause The Kinds Of Highly Elevated Health Harms Listed Above.

Many dangerous toxics are associated with Limerick's air pollution and water contamination.

In a discussion between hearings 9-22-11, NRC's Lisa Regner made several comments which led us to believe she either has little or no knowledge or no interest in the potential for serious health harms from Limerick's major air pollution permit or Limerick's threats to the vital source of drinking water through Limerick's NPDES permit, or toxic threats to the river and public health from mine water pumping to supplement the flow for Limerick operations.

- **Ms. Regner is in charge of Limerick's Environmental Review for Relicensing. This lack of knowledge and/or dismissive attitude are not acceptable when health and lives are in the balance.**

**NRC REVIEW OF ALL OF LIMERICK NUCLEAR PLANT'S POLLUTION THREATS IS IMPERATIVE!
LIMERICK'S HARMS AND THREATS WILL BE DRASTICALLY INCREASING, ACCORDING TO
EXELON'S REQUESTS MADE TO OTHER AGENCIES**

1. **Limerick's Cooling Towers are causing DEPLETION that results in all toxic discharges CONCENTRATING in the river that is the vital drinking water source for almost 2 million people from Pottstown to Philadelphia.**
 - Limerick's cooling towers have been causing significant depletion and low flows in the river that are concentrating all the dangerous toxics Limerick is discharging and/or pumping into the river.
 - Water treatment systems do not test for all the toxics associated with Limerick's discharges, much less remove them.
 - To deal with elevated levels of some toxics, water treatment systems add other toxics, further increasing health threats from concentrated toxics.
 - To slightly minimize depletion Exelon pumps more toxics into the river from mine pits.
2. **Limerick Was Granted A 6-Fold INCREASE In Dangerous Air Pollution From Limerick's Cooling Towers in 2009 by PA DEP.**
 - Research blames the kind of air pollution increased for thousands of deaths a year, and increased emergency room visits and hospitalization for everything from asthma and other respiratory problems to heart attacks and strokes.

- DEP called Limerick's cooling towers an effluent stream into the sky.
 - Massive toxics drawn in with over 20 1/2 billion gallons of Schuylkill River water each year are NOT filtered out by Exelon.
 - Vast amounts of chlorine and other dangerous toxic chemicals are added to the cooling towers every day.
 - Exelon itself proved the air pollution from cooling towers was too dangerous. Exelon refused N.J. DEP's requirement to put up cooling towers at Exelon's Oyster Creek Nuclear Plant in New Jersey, stating air pollution from cooling towers was the reason for non-compliance.
3. **Exelon is asking PA DEP for Limerick's toxic discharge limits into the river to be raised to 4 times Safe Drinking Water Standards. (This is a source of drinking water for almost two million people) Limerick's current limit is already doubled Safe Drinking Water Standards. Limerick's permit reveals that Limerick has even violated the new standard requested.**
 4. **Exelon is asking DRBC to pump more hazardous mine pit water into the river to operate Limerick.**
 5. **While Exelon is asking to significantly increase pollution discharges into the river, at the same time Exelon is asking to reduce and eliminate important safeguards established as part of the licensing process, including:**
 - Eliminate temperature restrictions
 - Reduce low-flow restrictions
 - Reduce monitoring requirements
 - Eliminate future public participation when adding more and more contaminated unfiltered mine waters

IT WOULD NOT BE CREDIBLE FOR NRC TO CLAIM THE ABOVE MENTIONED SIGNIFICANT AND INCREASING ENVIRONMENTAL AND HEALTH THREATS FROM LIMERICK OPERATIONS CAN BE IGNORED IN NRC'S ENVIRONMENTAL IMPACT STATEMENT. THAT WOULD BE ABSURD!

NRC HAS THE RESPONSIBILITY TO PROTECT PUBLIC HEALTH AND THE ENVIRONMENT

1. **The NRC is the government agency charged by the U.S. Congress with the grave responsibility to protect public health and safety and the environment related to operation of commercial nuclear reactors in the U.S.**
2. **Threats to public health and the environment listed above are undeniable and clearly as a result of operating Limerick Nuclear Plant, a commercial U.S. nuclear reactor.**
3. **9-22-11 Lisa Regner, NRC's employee responsible for Limerick's Environmental Impact Statement said: (confirmed by video)**
 - a. **NRC's environmental review will consider impacts and any mitigation of those impacts that NRC considers "significant".**
 - b. **NRC will determine if environmental impacts are "reasonable".**
 - c. **NRC consults with various state and federal officials.**
 - d. **NRC is looking for environmental impacts from the continued operation of Limerick.**

- e. NRC wants to know:
- ✓ What local issues NRC should focus on during NRC's environmental review of Limerick
 - ✓ What environmental issues NRC should examine during the environmental review
 - ✓ What reasonable alternatives are appropriate for this region.

Lisa Regner said, "***We need you to provide regional specific environmental facts to us - to do a thorough, comprehensive, environmental review. Public comments are an important part - are considered and addressed.***"

ACE is providing Ms. Regner with detailed summaries from our investigations on Limerick's major air and water pollution permits. This clearly identifies issues to focus on and examine in NRC's environmental review. Requested pollution increases, along with the additive, cumulative, and synergistic harmful impacts of radiation and toxic releases (past, present, and future), suggest it would be unethical for NRC to determine that any of these environmental threats are "reasonable" or "not significant".

In fact, increases in Limerick's air and water pollution should be mitigated to the degree possible, by Exelon filtering massive water intake and wastewater discharges, as well as mine water pumping into the river. We believe NRC has an obligation to review our information then ask DEP and DRBC to require Exelon to filter intake, discharges, and mine water, to protect public health and safety until Limerick closes in 2029.

For 11 years ACE did an intensive investigation on the environmental harms and threats of Limerick Nuclear Plant operations.

ACE is submitting for the record, brief detailed summaries of our findings on each issue below, related to Limerick Nuclear Plant's long-term unprecedented environmental harms, threats, and risks.

Sections in our report include:

- 1. Radiation Into Air and Water From Routine and Accidental Emissions**
- 2. Major Air Pollution Under Health Based Standards of the Clean Air Act**
- 3. Schuylkill River Depletion and Major Drinking Water Contamination**
- 4. Radioactive Groundwater Contamination**
- 5. Radiation Reporting Levels Increased Dramatically After Japan Disaster**
- 6. Alarming Cancer Increases, Especially In Children, Since Limerick Started Operating**
- 7. Increased Risk of Meltdown From More Frequent and Stronger Earthquakes and Other Natural Disasters**
- 8. Threats From Unguarded Terrorist Attacks With Planes and Missiles, Cyber Attacks**

9. Need for an Updated Evacuation Plan and Increased EPZ
10. Increased Costs to the Public - More Cancers and Other Costly Illnesses, More Emergency Room Visits and Hospitalizations from Drastic Increases in PM-10 and TDS, Treatment For Drinking Water, Environmental Clean-Up
11. Ways to Replace Dangerous, Dirty, Harmful, and Costly Nuclear Power With Safe, Clean, Renewable Energy. Nuclear power is not always reliable.
12. Deadly High Level Radioactive Wastes Packed In Vulnerable Fuel Pools On Site
13. Lax Fire Safety Regulations
14. Aging Deteriorating Equipment - Buried Pipes and Cables

Conclusion: Harms, threats, and risks will continue to increase until Limerick's current operating licenses expire in 2029. Taking into account the cumulative long-term harms, it would be negligent for NRC to approve license renewals until 2049. Limerick Nuclear Power Plant Must Be Closed, Not Relicensed Until 2049. We do not believe that an unbiased, thorough, comprehensive, environmental review by NRC can lead to any other conclusion.

Alliance For A Clean Environment - October 2011

Copies: Senator Bob Casey
 Senator Pat Toomey
 Congressman Gerlach
 Congressman Dent
 Congresswoman Schwartz
 Governor Corbett
 PA Senator Rafferty
 PA Senator Dinniman

ⁱ Exelon's Radiological Monitoring Reports for Limerick Nuclear Plant 2009
ⁱⁱ "BEIR VII" Report, National Academy of Sciences
ⁱⁱⁱ May 18, 2011 – Video Tape of NRC Meeting in Limerick
^{iv} May 18, 2011 Video Tape of NRC Meeting in Limerick
^v PA Cancer Registry and CDC
^{vi} Exelon's Radiological Monitoring Reports for Limerick Nuclear Plant 2009
^{vii} NRC Press Release 3-16-11
^{viii} New York academy of Science – nyas.org/annals, "Consequences to People and the Environment"
^{ix} "Deadly Deceit: Low Level Radiation – High Level Cover-up", by Jay Gould and Ben Goldman, 1990
