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

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

RE: Potential For An Unfolding Radioactive Groundwater Disaster From Leaking Nuclear Plants And NRC's Capitulation To The Nuclear Industry

Dear Mr. Krohn,

At NRC's 5/25/10 meeting in Limerick, we asked questions related to what we believe could be a **potential unfolding radioactive groundwater disaster, related to pipes under U.S. nuclear plants which are leaking radiation into groundwater.** Responses at that meeting and our subsequent review of NRC's fact sheet on "Buried Pipes at Nuclear Reactors" are concerning. We have even more concerns about what could be going on at Limerick Nuclear Power Plant, now and in the future.

U.S. nuclear reactors are documented to be leaking radiation into groundwater from aging and deteriorating underground pipes. NRC attempted to downplay and trivialize this serious threat to groundwater, both at the meeting and in NRC's fact sheet. Our conclusion is that the public's interests are not being properly weighed in NRC's current policies, attitude, and actions regarding leaking U.S. nuclear reactors.

NRC's "Leak First and Fix Later" Policy is an Unacceptable Threat to Groundwater and Public Drinking Water. Evidence shows NRC's policy failed to prevent radioactive groundwater contamination from leaking pipes under 102 of 104 U.S. nuclear reactors. NRC's policies are NOT protective and NOT acceptable. Radioactive contaminated groundwater and soil realistically can't be completely cleaned up. Prevention is imperative. NRC policies must change immediately. NRC should not relicense another nuclear plant without requiring replacement of pipes under every 40-year old nuclear reactor.

Major cause for concern with NRC policies:

1. Buried pipe systems carrying radioactive water under U.S. nuclear reactors remain inaccessible, and therefore, largely uninspected and unmaintained.
2. Radioactive leaks into groundwater are inevitable and can go undetected and uncontained for long periods of time. Once radioactive groundwater spreads, it's too late.
3. Once radioactive contaminated groundwater reaches private or public water systems, already proven in Illinois, New Jersey, Vermont and others, it is difficult, costly, and likely even impossible, to completely clean up contamination or filter all radionuclides out of drinking water.

It seems clear that for decades NRC ignored its oversight and enforcement responsibility at our nation's increasingly leaky nuclear power plants.

4. NRC is ceding its responsibility to voluntary industry initiatives that will add years on to a decades old environmental and public health risk problem, clearly not in the best public interests.
   - ✓ Despite NRC efforts initiated in 1979 to prevent uncontrolled radioactive releases to groundwater, NRC is capitulating to an industry decision to take almost three more years before announcing an action plan.
5. NRC has turned over its regulatory authority to an industry that now plans to stall corrective actions for years to come, for a decades old radioactive contamination problem.
   a. 3-year nuclear industry stall tactics will allow radioactive contamination to spread further.
   b. 3-year industry stall tactics will allow more leaking nukes to be re-licensed.
      - ✓ Example: NRC recently re-licensed Oyster Creek for another 20 years. Seven days later, Exelon disclosed radioactive water leaking from buried pipes.
      - ✓ This absolutely discredits NRC's oversight and re-licensing process. Either NRC knew and covered it up, or NRC didn't know and should have.
      - ✓ How can we now trust NRC's re-licensing process for Limerick?

6. NRC should be mandating compliance with established requirements for the control and monitoring of buried pipe systems carrying radioactive effluent.

It is difficult to understand why NRC assists the nuclear industry in deceiving the public about the reality of the radioactive threats to groundwater from leaking pipes under nuclear plants. We are very concerned that this is developing into a hidden radioactive groundwater disaster, while both NRC and the nuclear industry avoid full and truthful disclosure of leaks and radioactive groundwater contamination, fail to immediately stop leaking, and downplay and trivialize the health risks. It is shameful that NRC and the nuclear industry downplay and trivialize the health risks of prolonged exposure to radiation, a known carcinogen, which also causes genetic mutations and birth defects.

NRC's fact sheet gives us even less confidence in NRC's oversight of leaking pipes under U.S. nuclear plants.

1. NRC diminishes its credibility in the 1st sentence of the fact sheet, stating, "several" reactors are contaminating groundwater, when evidence suggests 102 of our nation's reactors have leaked.
   a. 102 is far more than several. 102 of our nation's 104 reactor units are documented to have had radioactive leaks from underground pipes into groundwater from 1963 through February 2009.
   b. 15 radioactive leaks from buried pipe systems at 13 different reactor sites were reported just from March 2009 through April 2010. That's also more than several.

2. In the first sentence, NRC's fact sheet also makes the unsubstantiated and even false claim that leaks of radioactive material into groundwater are "minor".
   a. Evidence shows leaks at some reactors are definitely NOT minor. It's callous disregard for public health for NRC to downplay and trivialize the health risks of prolonged exposure to the leaking radiation, a known carcinogen which is shown to cause cancer, genetic mutations, and birth defects.
   b. "Minor" is a deceptive term that should not be used when it comes to radioactive contamination of drinking water, especially when radionuclides are difficult and costly, if not impossible, to filter out.
   c. What NRC considers "Minor" could be major to the unborn, infants, and those who already have cancer and other serious health problems. Additive and cumulative harmful impacts are completely ignored in NRC's claim of "minor".

   Furthermore, owners of the reactors with a vested interest in the outcome control all the monitoring, testing, and reporting. NRC has no independent data to make any definitive claim about levels. Some owners have already shown they shouldn't be trusted. Exelon and the Vermont Yankee owner demonstrated they distort the truth as long as they can, while radioactive groundwater contamination threats continue and get worse.
   a. Levels up to 2.7 million picocuries per liter reported at Vermont Yankee should not be called "minor" by anyone, much less NRC.
   b. Exelon bought bottled water for 600 people for 4 years in Illinois. Does NRC expect the public to believe that was for "minor" contamination?

3. NRC also attempts to minimize radioactive groundwater threats from leaking nuclear plant pipes by misleading the public into believing the pipes are leaking only one kind of radiation, tritium.
   a. Radioactive groundwater contamination at our nation's 102 nuclear plants is not only about tritium. Reactors create 100 to 200 radioactive chemicals. How are we to believe only one is leaking into groundwater?
   b. For example, radionuclides such as strontium, cesium, iodine, and plutonium are likely also to be transported in underground pipes at nuclear plants and leaking into groundwater.
   c. All can cause cancer. NRC should require independent testing for all radionuclides that are associated with each nuclear reactor.

4. NRC's fact sheet also deceptively attempts to trivialize health impacts from tritium. NRC's misleading fact sheet claims "*tritium is a mildly radioactive isotope*".
   a. Scientific studies show that exposure to tritium is linked with higher cancer rates in humans.
   b. 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).
   c. Tritium has been shown to be present in groundwater around nuclear plants at levels far above that legally permitted.
   d. Many believe permitted levels fall far short of protecting children (the most sensitive to the harm caused by radiation exposure), especially when considering the additive, cumulative, and synergistic impacts with all the other radionuclides that could be released with the leaks at nuclear plants.

It is deplorable that NRC and the industry deceive the public about all the unaddressed radionuclides in the groundwater from leaking pipes under U.S. nuclear reactors and about the potential harmful health impacts from long-term exposure through ingestion of radioactive contaminated groundwater.

Simple review of a self-serving monitoring program by an industry that can't be trusted is obviously useless. NRC's fact sheet misleadingly states, "*NRC reviews affected plants' groundwater monitoring programs to confirm the leaks do not affect public health and safety and the environment.*"

Examples below document serious radioactive threats to groundwater and public water as a result of industry deception and NRC's failed policies and inadequate protection. NRC's reviews of nuclear industry monitoring programs have obviously been grossly ineffective and have failed to protect public health, safety, and the environment:

1. Braidwood, Illinois – 22 recurring uncontrolled radioactive spills from the same buried pipe went undisclosed from 1996 to 2005. 600 people have been supplied bottled water by Exelon, owner of Braidwood, for more than four years. NRC obviously failed to protect public health, safety, and the environment. Bottled water did not eliminate threats.
   - ✓ For many years of contamination there was no bottled water.
   - ✓ People still shower, cook, brush their teeth, etc. with radioactive contaminated water. There was no clean up of radioactive contamination in the ground.

2. Vermont Yankee – January 2010, readings identified radioactive groundwater contamination from 700 picocuries per liter to 2.7 million picocuries per liter. That is not minor. Industry officials falsely reported that there were no buried pipes carrying radioactive water under the reactor. Yet, it appears NRC is still considering a 20-year license extension.
   - ✓ How is that protecting the environment, or public health and safety?

3. Oyster Creek, New Jersey - NRC recently re-licensed this oldest nuclear plant in the U.S. Seven days later Exelon disclosed radioactive water leaking from buried pipes.
   - ✓ Either NRC was duped by Exelon or NRC was complicit. Either is unacceptable.
   - ✓ This seriously damages NRC's credibility in its reviews for re-licensing.

- **NRC's Irresponsible Policies Must Change, Starting At Limerick Nuclear Plant.** Exelon is asking NRC for license extension. Exelon has shown in Illinois and New Jersey that it can't be trusted to provide full and accurate timely disclosure of radioactive leaks under its nuclear plants. We don't want the same thing to happen at Limerick that NRC allowed to happen at Oyster Creek.

- **Prevention and Precaution Are Imperative!** Prior to even considering a 20-year Limerick license extension, we call on NRC to require Exelon to replace all Limerick's aging pipes carrying radioactive water, preferably placed above ground, to more immediately see corrosion and deterioration in the future.

Why Prevention and Precaution Are Imperative At Limerick Nuclear Plant

1. Limerick Nuclear Plant is located in a fractured bedrock aquifer. Therefore, groundwater contamination can spread in any direction.
    a. In a fractured bedrock aquifer, such as that at Limerick, to accurately and fully determine the extent of off-site groundwater contamination there would have to be STACKED monitoring wells about a foot apart, around the entire perimeter of the site.
    b. To protect the public's water, NRC must prevent Limerick from contaminating groundwater in the first place.
        1) On Limerick's 600 acre site, radioactive groundwater contamination could go completely undetected forever without stacked monitoring wells, every foot around the perimeter (which could be cost prohibitive).
        2) Exelon, an untrustworthy company with a vested interest in the outcome, controls the entire protocol for monitoring, testing, and reporting. Exelon could purposefully place monitoring wells where they know no contamination would be detected.

2. Once the region's groundwater is contaminated with radiation, it is too late to protect public health, wildlife, or the environment.
    a. It is difficult, if not impossible, to filter out all the different radionuclides associated with Limerick's power production if the radioactive groundwater reaches:
        1) Vast numbers of residential wells surrounding Limerick Nuclear Plant, or
        2) Nearby public water wells, one approximately only 2 miles away.
    b. Wildlife near Limerick was already identified with huge tumors.
    c. Once contaminated with radiation, even if it was possible to clean up the groundwater or surrounding soil, it would also be cost prohibitive.

3. We can't trust Exelon to provide full, accurate, and timely disclosure of leaking pipes and radioactive contaminated groundwater, or to take immediate action when problems are found. Even when radioactive groundwater contamination can no longer be denied, Exelon has shown opposition to spending the money to replace pipes immediately.
    a. With miles of pipeline under Limerick Nuclear Power Plant, there is no realistic way for NRC to actually see corrosion of old pipes with visual inspection.
    b. NRC doesn't actually provide the public with independent monitoring, testing, or reporting. Reviews of Exelon's reports have proven to be unreliable verification.

4. Oyster Creek Nuclear Plant in New Jersey shows what happens when NRC fails to require precaution and prevention, or even immediate full disclosure. How could NRC possibly have determined just last year (2009) that Oyster Creek could operate safety for another 20 years and give it a license extension, when 7 days later this severe contamination threat was disclosed? How did NRC let this happen? This must be avoided at Limerick.
    a. Radioactive water at concentrations 50 times higher than those allowed by law has reached a major New Jersey aquifer, southern New Jersey's main source of drinking water. Oyster Creek Nuclear Plant is a major threat to South Jersey's drinking water.
    b. First reported April 9, 2009, the radioactive groundwater contamination is gradually moving toward wells in the area at 1 to 3 feet a day.
    c. Corrosion left the reactor's crucial safety liner rusted and thinned. Leaking could have been going on for a long time unreported. This could be happening at many sites without being detected by NRC or reported by Exelon.
    d. NJDEP is taking aggressive action to safeguard water and hold Exelon accountable for this leaky 40 year old plant, while NRC does not appear to even be suspending or withdrawing the license renewal.
    e. As stated earlier, NRC was either fooled or complicit. Either is shameful and unforgiveable. The wait and see approach in response to another 'trust us' from Exelon resulted in exactly what some feared, contamination of one of the most significant aquifers in the region.

How can the public have any confidence in NRC's integrity and competence when NRC's fact sheet illogically claims - *"Groundwater Monitoring Programs Confirm Leaks Do Not Affect Public Health, Safety, and the Environment"*, when that claim is unsubstantiated and detached from reality? Facts about actual threats listed in this letter suggest NRC's monitoring program is a dismal failure at protecting public health, safety, and the environment. It is unacceptable for NRC to make unsubstantiated claims proven illogical and even false by reality, especially when relying only on industry generated reports and claims.

1. In reality, NRC can't access underground pipes to actually inspect them. NRC has little or no actual proof about whether all two to 20 miles of underground pipeline at each of our nation's nuclear reactors are already leaking or breaking down to such a degree that they will surely leak in the future.
    a. In reality, groundwater and public drinking water in entire regions surrounding our nation's 104 reactors are at risk from radioactive contamination due to old pipes breaking down from corrosion and leaking.
    b. The nuclear industry has failed to safely maintain or replace 25 to 40 year old underground pipes, that will eventually leak radiation into groundwater.

NRC has failed to require the nuclear industry to replace 25 to 40 year old pipes, even before relicensing the reactors to run for another 20 years. When documented leaks can no longer be denied by the industry, instead of requiring immediate replacement of leaking pipes, NRC allows stall tactics to be used by the industry.

NRC allows the industry to deceive the agency, cut corners, make up their own regulations, and stall, time after time In fact, it appears to us that NRC's fact sheet is little more than a cover-up and excuse for the nuclear industry to continue to make up its own reality, regulations and safety requirements regarding buried, leaking pipes under nuclear plants. Only after 20 years has NRC even begun to openly discuss the growing catastrophe.

It's long past time for NRC to actually protect the public interests instead of the profits of the nuclear industry. Once water is contaminated with radiation, it's too late. 102 of 104 of our nation's nuclear reactors are documented to have already leaked radiation into groundwater from buried pipe systems carrying radioactive water. These pipes largely remain inaccessible. In reality, they go uninspected and unmaintained.

- **As a condition to even apply for relicensing, NRC should be requiring replacement of all underground pipes carrying radioactive water.**
- **Wherever possible, new pipes should be placed above ground or near the surface where they can be more easily inspected by NRC.**

ACE Is Requesting NRC To Provide Specific and Detailed Responses About Leaks in Pipes at Limerick Nuclear Power Plant, including past and present information.

5/25/10 we asked if Limerick Nuclear Plant was one of the 102 nuclear reactors that leaked. Oddly, NRC couldn't seem to answer that question. An Exelon PR person first denied Limerick leaked, but later claimed she wasn't saying Limerick never leaked.

We ask NRC to provide ACE with full and accurate disclosure on Limerick Nuclear Plant's underground pipes and radioactive leaks.

1. **Did Limerick Nuclear Power Plant ever have leaking underground pipes?**

    If the answer is yes,
    a. When did NRC first learn of the leak?
    b. How long could the leak have been going on undetected?

c. How long did it take Exelon to fix the leak after NRC was informed?
d. How did Exelon fix the leak?
e. How did Exelon clean up contamination?

2. **How many miles of pipeline carry radioactive water at Limerick Nuclear Power Plant? Please provide independent verification of all radioactive pipelines at Limerick.**

3. **How many miles of Limerick's pipeline carrying radioactive water are buried underground?**

4. **Please explain how NRC accesses the miles of pipeline under Limerick for inspection.**

5. **Please explain in detail how NRC can guarantee the public that all the miles of Limerick's pipelines are properly maintained.**

6. **Please provide ACE with proof of NRC inspections and the protocol for those inspections - include dates, data, and correspondence.**

ACE requests detailed responses to all our questions about Limerick Nuclear Power Plant. Please do not refer us to the website for answers. Interested citizens living around Limerick Nuclear Plant deserve full and truthful disclosure from NRC.

ACE urges NRC to consider the potentially disastrous realities from nuclear reactors leaking radiation into groundwater across our nation. Clearly, this requires precaution and the requirement of 25 to 40 year old pipes to be replaced BEFORE even one more reactor is relicensed.

We request that this letter be posted on NRC's website in its entirety

Thank you,

Lewis Cuthbert

Dr. Lewis Cuthbert
ACE President

CC: Senator Casey
Senator Specter
Congressman Sestak
Congressman Gerlach
Congressman Dent
Governor Rendell
PA Senator Rafferty
PA Senator Dinniman
Representative Quigley
Representative Hennessey
Representative Vereb