3042

Cooper, Kathy

From:	RegComments@pa.gov
Sent:	Friday, March 14, 2014 7:39 PM
To:	Environment-Committee@pasenate.com; apankake@pasen.gov; IRRC; RegComments@pa.gov; eregop@pahousegop.com; environmentalcommittee@pahouse.net
Cc:	ra-epmsdevelopment@pa.gov
Subject:	Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

Re: Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

The Environmental Quality Board (EQB) has received the following comments regarding the above-referenced proposed rulemaking.

Commentor Information:

Rev William Hufford
PA Resident (wedthufford@comcast.net)
106 Virginia Ave
Latrobe, PA 15650 US

Comments entered:

Standards should include at least the following for the protection of the people and the environment of the state: [1] restore water supplies to safe drinking standards, [2] pre-drill water quality baseline testing, [3] prohibit wastewater storage in open pits or impoundments, [4] drill cuttings testing for radioactivity, [5] prohibit storage or burial of drill cuttings onsite, [6] highest level of control relative to potential stray gas migration.

No attachments were included as part of this comment.

Please contact me if you have any questions.

Sincerely,
Hayley Book

Hayley Book
Director, Office of Policy
PA Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063

4

3042

Cooper, Kathy

From:	RegComments@pa.gov
Sent:	Friday, March 14, 2014 8:43 PM
To:	Environment-Committee@pasenate.com; apankake@pasen.gov; IRRC; RegComments@pa.gov; eregop@pahousegop.com; environmentalcommittee@pahouse.net
Cc:	ra-epmsdevelopment@pa.gov
Subject:	Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

Re: Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

The Environmental Quality Board (EQB) has received the following comments regarding the above-referenced proposed rulemaking.

Commentor Information:

Daniel Behl
(Dmb193@hotmail.com)
18 James Hayward rd
Glen mills, PA 19352 US

Comments entered:

Health should be put above profit. Remember we live in a closed system. The pollution we make isn't going anywhere. It'll be here to harm generation after generation.

No attachments were included as part of this comment.

Please contact me if you have any questions.

Sincerely,
Hayley Book

Hayley Book
Director, Office of Policy
PA Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 2063
Harrisburg, PA 17105-2063
Office: 717-783-8727

3042

Cooper, Kathy

From:	RegComments@pa.gov
Sent:	Friday, March 14, 2014 4:37 PM
To:	Environment-Committee@pasenate.com; apankake@pasen.gov; IRRC; RegComments@pa.gov; eregop@pahousegop.com; environmentalcommittee@pahouse.net
Cc:	ra-epmsdevelopment@pa.gov
Subject:	Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

Re: Proposed Rulemaking - Environmental Protection Performance Standards at Oil and Gas Well Sites

The Environmental Quality Board (EQB) has received the following comments regarding the above-referenced proposed rulemaking.

Commentor Information:

Benita J. Campbell
(b_j_campell@yahoo.com)
23 Hindman Avenue
Burgettstown, PA 15021-1165 US

Comments entered:

The following are four of my concerns regarding fracking:

1. Pre-drill water testing and the restoration and replacement of contaminated water supplies (Sections 78.51 and 78.52). At least 161 water supplies in the state have been impacted by Marcellus shale drilling. Yet the industry uses its aggressive power to resist having the water restored to only pre-contamination conditions—and that doesn't guarantee that it would be potable. Compounding this problem, the industry-captured DEP allows the driller to decide when, where, and how to conduct water quality tests before drilling starts.
Instead, drillers must be made to restore contaminated drinking water to a quality that meets the Safe Drinking Water Act standards, no matter the condition of the water prior to drilling. Moreover, drillers must use a consistent list of parameters for pre-drill water testing, which DEP must establish before the proposed regulatory changes are adopted. The parameters should be as comprehensive as possible, but at a minimum match what DEP uses when it conducts full contamination investigations and to ensure that complete baseline data is available. Lastly, all drillers must make pre-drill data available to the public, while protecting individual homeowners' privacy, through an online platform, which DEP must establish before the proposed regulatory changes are adopted.

2. Standards for frack pits and impoundments (Sections 78.56, 78.57, 78.58, and 78.59). Only because of all the violations and the potential for water and air pollution have some companies transitioned away from pits and standardized the use of closed loop systems which utilize tanks to store wastewater.

So the DEP must explicitly prohibit operators from using open pits for storage of regulated substances--including wastewater, drill cuttings, and substances (like gels and cement) that return to the surface after fracking. Many spills, leaks, and other problems involving pits have occurred statewide that contaminate water, soil and air. Waste must be stored only in closed systems. Additionally, onsite processing of shale drill cuttings must be prohibited because they often contain hazardous substances and radioactive materials and require thorough analysis and special handling. Finally we need an honest definition of "freshwater" used in oil and gas activities. Leftover fracking and contaminated fluids being recycled for fracking (i.e., from mining or sewage) is often mingled with clean water for extra operations. Without a clear definition of freshwater, operators avoid regulations on the use and disposal of polluted substances.

3. Disposal of brine, drill cuttings, and residual waste (Sections 78.60, 78.61, 78.62, and 78.63, and 78.70) Frackers are given preferential treatment as they currently escape the strict federal regulation of hazardous substances that other industries have to follow. Yet drillers generate large amounts of solid and liquid waste that can harm water supplies, air quality, land, health, and wildlife. Pennsylvania must apply U.S. Resource Recovery and Conservation Act standards to regulate all aspects of the storage, transport, and use of hazardous materials contained in pits, centralized impoundments, and tanks. Unfortunately, DEP's proposed Chapter 78 changes are deficient in that they don't address the risks posed by hazardous waste and do little to improve current regulations or ensure safe disposal.
Therefore, DEP must prohibit the burial or land application of drill cuttings, which can contain polluting and radioactive substances. DEP proposes different conditions for disposal of drill cuttings from above and below the well casing, but neither makes the practice safe. Cuttings from deep underground may contain more pollutants, but chemical additives and contaminated fluids are also found in drill cuttings from shallower areas. DEP must also prohibit the onsite burial of waste pits because they can leak and pollute groundwater over time. Yet burial allows operators to walk away from any responsibility after completing operations. Why is that???
Additionally, DEP must prohibit the use of brine for dust suppression, de-icing, and road stabilization. Stormwater runoff carries brine into nearby waterways and wetlands. So not allowing the use of brine from shale gas wells is a positive step, but brine from conventional wells can also push salinity loads far above any naturally occurring conditions. Lastly, DEP must prohibit the land application of tophole water, pit water, fill, or dredged material. These substances can contain chemicals and sediments bound with pollutants that pose risks to water, air and soil.

4. Identification of orphaned and abandoned gas and oil wells (Section 78.52(a). This is an important change and should be supported. About 200,000 abandoned wells exist statewide. As drilling spreads and intensifies, so does the chance of accidents, blowouts, and pollution from the intersection of new wells with old ones.
DEP must expand these changes and require operators to first identify existing wells before site and well construction and drilling (not just fracking), so that the location of a new well can be changed if needed; and then plug and seal or otherwise appropriately address abandoned and orphaned wells according to state safety standards prior to well site construction. The state lacks funding to address the large number of old wells, so drillers should be responsible for preventing pollution of adjacent water wells and air pollution from accidents when they occur.

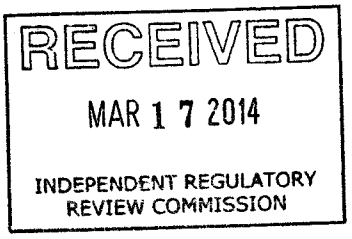
No attachments were included as part of this comment.

Please contact me if you have any questions.

3042

DRAFT

To: Environmental Quality Board
16th Floor, Rachel Carson State Office Building
P.O. Box 8477
Harrisburg, PA 17105-8477



From: Cynthia Walter, Ph.D.
916 Essex Dr.
Greensburg, PA 15601
walteratherton@gmail.com

Re:Proposed Environmental Protection Performance Standards at Oil and Gas Well Sites (25 Pa Code, Chapter 78)

I am a scientist with over 25 years experience teaching and conducting research on water quality in Pennsylvania, and most recently published a report that documents problems and progress to restore streams impacted from coal mining. My remarks are based on analysis of dozens of peer-reviewed papers, and dozens of talks and interviews with industry scientists, academics, federal and state specialists. I submit the following Recommendations to the Environmental Quality Board's proposed regulations, published in the *Pennsylvania Bulletin* on Saturday, December 14, 2013 (43 Pa.B. 7377) and General Comments as a partial rationale to the comments.

Specific Recommendations (All underlined statements)
Accompanying justifications/explanations are not underlined.

1. **Water Used for Fracking (i.e. water to be sent into well)**
   - A. **Regulations should not permit open containers or "pits": all fluids should be contained only in closed tanks and closed loop systems.**
   - B. **The tanks and closed loop systems should be permitted only for a designated, limited time, e.g., during weeks of fracking.**
   - C. **This water should not be called "fresh water."**

   The term "fresh water" is confusing to the public and ambiguous for operators. The so called "fresh water" (i.e. water fresh to a well pad) comes from a wide range of sources each with different, often undocumented contaminants.
   For example, this "fresh water' can be any of the following:
   a. Produced water from a prior well fracking that is intended to be recycled into a future well; therefore, this water will have chemicals from the previously fracked shale deposits (e.g., salts, heavy metals, organic compounds and radioncucleotides) as well as chemicals introduced by the prior fracking company (e.g., acids and preservatives) .
   b. Surface or ground water impacted by another industry, e.g., mercury in rivers downstream from coal burning power plants
   c. Surface or ground water where acid deposition has dissolved naturally occurring metals, such as aluminum.

The water prepared to be put into the well is highly variable in chemistry. It can easily contain enough hazardous chemicals to contaminate the site; thus it must be in closed containers.

Note that the requirement for closed containers/closed loop systems will avoid the use of "natural topographic depressions" within the definitions of an allowed "pit" and/or "freshwater impoundment." No regulations should allow fluids related to oil and gas operations to be managed in "natural depressions."

2. **Produced Water (i.e. water returned from fracking well)**
   A. **Regulations should not permit any open containers.**
   B. **Produced water should be in closed tanks and closed loop systems designed for the broad array of chemicals possible in produced water.**
   C. **The tanks and closed loop systems should be permitted only for a designated, limited time, e.g., during weeks of fracking.**

Note that the requirement for closed containers/closed loop systems will avoid the use of "natural topographic depressions" within the definitions of an allowed "pit" and/or "freshwater impoundment." No regulations should allow fluids related to oil and gas operations to be managed in "natural depressions." All facilities used to hold fluids that may contain potential water pollutants should be closed and specifically engineered for the task.

Produced water contains chemicals from the prior shale deposits (e.g., salts, heavy metals, organic compounds and radioncucleotides) as well as chemicals introduced by the fracking company (e.g., acids and preservatives).
Produced water poses a threat to the water, soil and air.

a. **Water threat**: Concentrations of the chemicals listed above are up to 1000 times the allowed limits in surface or drinking water supplies. Numerous cases of harm to well water, municipal water, and stream life have been recorded in PA and in every formation in the US where deep shale operations have occurred.
b. **Soil threat:** The heavy metals and radionucleotides will permanently contaminate any soil where produced water is spilled. The salts might be washed out, but this simply transfers the problem to water supplies.
c. **Air threat:** Produced water often contains organic compounds released as volatiles such as the carcinogen, benzene, that travel in plums off site. These toxic clouds are hard to measure, but scientists have begun to document their presence downwind from operations, resulting in a prediction of increased cancer risk to residents living near shale gas operations.

The many threats to water, soil and air will not be eliminated with containers and closed loop systems, but this will reduce the most obvious problems. The US Department of the Interior, advises of pits: "Use of enclosed tanks and closed loop or semi-closed loop systems is environmentally preferable to the use of open pits and is to be encouraged by the BLM. Open production pits are to be strongly discouraged. Closed tanks and systems minimize waste, entry by wildlife, fugitive emissions that affect air quality, and reduce the risk of soil and groundwater contamination. In addition, the use of tanks instead of pits expedites the ability to complete interim reclamation. Costs may be reduced with the use of tanks, particularly when the pit requires solidification or netting." Waste pits are banned in New Mexico. According to news articles: Antero in Colorado does not utilize pits, but a closed loop system. Chief and Rex Energy have moved to all closed loop systems. Andarko Petroleum uses close loop systems in

Pennsylvania. The EPA Star program recommends a closed loop system. But Pennsylvania's *new proposed* regulations allow the continuance of frack pits, inviting further pollution and contamination of waters.

3. **Fumes, Mists and Liquids Discharged from Storage Tanks**
   A. **There should be no legally allowed leakage or release of vapors, mists or fluids.**
   B. **Containers that might accumulate vapors, such as condensate tanks or produced water tanks, must have vapor capture mechanisms that prevent the escape of any fumes, especially known toxins such as benzene.**
   C. **Air quality monitors that operate continuously must be installed to verify and report to the DEP that harmful gases are not escaping from the site.**
   D. **Limits for chemical emissions from tanks must take into account**
      (1) the density of tanks in an area as aggregate air pollution sources
      (2) their proximity to buildings with sensitive populations (e.g., schools, hospitals)

Discharges of vapors and mists during tank checks and leaks during storm water flow are common sources of pollutants. These are occasionally detected by citizens or the DEP, and receive little penalty. Such chronic, small releases add up for the people and animals near the well or industry facility.

The proposed regulations will not prevent flooding, spills, and leak violations that are commonly occurring, but they will motivate operators to plan ahead with a greater margin of safety for liquid and vapor releases. For example, allowing open pits and tanks cordoned off within some general freeboard space, allows a company to receive a lower penalty for a discharge of chemicals if stormwater exceeds the freeboard. Even now, violations due to overflow of the required freeboard occur on a regular basis, companies repeatedly are charged with the same violations, and fines are limited or non-existent.

4. **Seasonal High Water Table**
   The definition of "seasonal high groundwater table" should be retained in the proposed regulations, because the term continues to play a key role in regulating oil and gas activities. (Section 78.1)
   Proposed section 78.1 deletes the definition of "seasonal high groundwater table" even though that term is still used throughout the regulations, including in sections 78.56(a)(11), 78.59b(e). This definition should be maintained to ensure clarity and consistent enforcement.

5. **Fluid Storage Set Back**
   The prohibition on construction of fluid storage areas within 100 feet of certain water bodies should be extended to all water bodies. (Section 78.59c)

   The current draft regulations prohibit well operators from building "centralized impoundments" for wastewaters within 100 feet of any "solid blue line stream" identified by the United States Geological Survey. Solid blue line streams flow consistently year round. This 100 foot buffer is important, but it should be extended to other streams that do not flow continuously. Although we recognize that Act 13 unwisely referred to "solid blue line streams," intermittent and ephemeral streams need to be protected as well. Some of our most vulnerable waters are intermittent portions of high quality streams. Those waters would not be adequately protected by these regulations. Furthermore, the DEP has an

obligation to protect intermittent streams under the Clean Streams Law. Rather than attempt to make that decision on a case by case analysis, the DEP should extend this buffer to all Pennsylvania streams.

6. **Investigation of Water Pollution**
   The DEP's duty to investigate water pollution should extend to all oil and gas activities. (Section 78.51(c)).

   The Chapter 78 regulations require the DEP to investigate instances of water pollution that occur near oil and gas wells. As part of its investigation, the DEP may determine that water pollution was caused by the "well site construction, drilling, alteration or operation activities." This set of activities is much more limited than the list of activities defined as "oil and gas activities" in Act 13. To ensure maximum protection of water resources, the DEP's investigation should extend to all oil and gas activities.

7. **Pre-drill Water Testing:**
   a. **All pre-drill water quality testing should be conducted by a certified third-party professional operator, and made available to the landowner .**
   b. **Testing should occur a minimum of 3 times for of water quantity and quality during low, high and average hydrological conditions**
   c. **a consistent list of parameters including at least the following measures:**
      Analyte (Inorganic) Analyte (Trace Metal) Analyte (Organic)
      Alkalinity
      Barium
      Chloride Calcium
      Conductivity Iron
      Hardness Magnesium Analyte
      Hydrocarbons (benzene, ethane, methane)
      Microbiology (Total Coliform/E.coli)
      Oil and Grease Manganese
      pH
      Potassium
      Radionucleotides (alpha and beta)
      Residue – Filterable and Non Filterable
      Sulfate Sodium
      Strontium
      Total Dissolved Solids
      Total Suspended Solids

      The list of items for the test are from the document. "PA-DEP Recommended Basic Oil & Gas Pre-Drill Parameters" (elibrary.dep.state.pa.us/dsweb/Get/Document-91717/8000-FS-DEP4300.pdf).

      Note that DEP water resource specialists such as Swistock and advisors from local county and the USDA consistently recommend 3 water tests to represent high, low and average conditions because in PA, the water table and chemistry can change greatly. Also, 3 water tests are needed to stand up in court. The short time of presumed liability makes it easy for a company to avoid responsibility for damage to a water supply because forces that impact water take time to emerge. In such cases, a court case is likely to require at least 3 sample times to prove good water quality

existed prior to operations. Families have lost cases in court because they did not have 3 tests; the drilling company paid for only one test. The necessary battery of tests is too expensive for the average homeowner, but 3 water tests per home is a small cost for a multimillion dollar well operation.

8. **Water replacement**
   Contaminated drinking water should be restored to meet the Safe Drinking Water Act standards. If the quality of water was superior to these standards prior to drilling, the operator must restore the water to that higher standard.

   Water quality is closely tied to property value and a homeowner with better than average water should have a right to maintain that quality of the property. Also, water quality standards are always being revised; a property with better quality water will more likely meet the new standards. This advantage should not be lost through the fault of the oil or gas facility operator.

9. **Presumption of liability**
   Presumption should apply to all oil and gas activities, including site construction.

   78.1 The proposed amendments states, "That the presumption of liability established in 58 Pa.C.S. § 3218(c) (relating to protection of water supplies) does not apply to pollution resulting from well site construction activities." This revision gives the oil and gas industry special treatment. Also, far too many actions can be hidden under the phrase of "well site construction activities."

   Operations on and near a well pad occur in a mix of actions and timing before during and after well sites are built before during and after drilling and fracking. Furthermore, sites are often modified during and after fracking. No one can separate the effects of "construction activities" from other effects. Also, separating out construction allows one company to attempt to blame another for harm associated with a well operation. This delays and may make it impossible for a harmed citizen to seek redress.

10. **Disposal, Brine and Drill Cuttings:**
    There should be no processing of drill cuttings on site nor should cuttings should be stored in pits.
    Disposal of brine, drill cuttings, and any residual waste should not be allowed for wells drilled on property not previously designated as a waste site.
    No burial of waste should occur on private or public forests, farms, parks, airport buffer, school property, etc. .
    Any burial of materials should occur only in sites designated as waste sites and, when burial is thus validated, it should meet the standards of the US Resource Recovery and Conservation Act.

The standards state that residual waste including contaminated drill cuttings may be disposed of on site. This is unacceptable for this or any industry. The storage of contaminated (to any degree) including radioactive drill cutting should be prohibited

Presently, the fracking industry is exempt from the regulation of hazardous substances that other industries must abide by. Those standards should be applied to all aspects of the storage,

transport, and use of hazardous materials contained in pits, centralized impoundments, and tanks.

Because Marcellus shale is more radioactive than other shale plays, the drill cuttings can be more radioactive, as evidence by alarms activated at waste disposal sites and the high measurement of radioactivity in a study downstream from the Josephine Treatment Plant in Indiana County which treats wastewater from oil and gas drilling. Radium levels of sediment samples collected in Blacklick Creek, downstream from the plant, were 200 times greater than background samples. Researcher Vengosh noted that levels exceed thresholds for radioactive waste disposal and pose "potential environmental risks of radium bioaccumulation in localized areas of shale gas wastewater disposal." There is no mention that evidence of positive radioactivity or chemical toxicity tests precludes the storage of drill cuttings in a pit or on-site burial.

11. Brine:

No brine from hydraulically fracked wells should be used for application on the well pad, industry access roads, private roads or public roads due not only to salinity loads, but to the possible presence of toxic chemicals and radioactive particles that may be contained in flowback water.

Comments in other sections in this paper emphasize the many toxins present in produced water. Furthermore, each truckload of brine is unique in chemistry depending on the formation and the time of flow from the well. It is impossible for an operator to test and certify the safety of each truckload of brine. Once a load of brine is dispersed, its chemicals will travel through surface flow and infiltration in unpredictable destinations, with unknown consequences. Furthermore, operators have no way to tally the combined effects of more than one brine application in an area. Permission to disperse brine will result in harm to leased property and neighbors due to read chemical presence and the perceived risk of chemicals. Just the permission to use brine will lower options for future use of the land because the presence or absence of a brine application will be hard to verify.

12. Land Application:

No wastewater or drill cuttings should be applied to land areas.

The comments for #11 above apply here as well.

13. Condensate Tanks

All gas facilities including tanks, pits, wells, and compressor stations should have monitors designed and operated by a third party, functioning 24 hours a day, and recording findings that are directly available to the DEP and public.

The gas industry should not be responsible for conducting this monitoring but should be financially responsible for payment of the implementation and conduction of that process. **78.56 (17):**

14. Abandoned Wells:
Those wells must be identified and sealed prior to any gas wells being drilled. Drillers are financially responsible for protecting the waters of Pennsylvania via the identification and plugging process

There are thousands of abandoned wells in PA, increasing the possibility of the migration of methane and other contaminants from fracked wells will move up to abandoned well bores to ground water.

15. **Radiation Monitoring and Labeling- on site and transport**
All liquid and solid waste must be monitored for all relevant forms of radiation and readings must appear clearly on current labels in at least the following conditions:
1). All temporary and permanent impoundments, storage tanks, pits, that collect discharges from wells must be tested at least quarterly.
2) All liquid and solid materials transported to permanent sites such as landfills and injection wells, must be tested and clearly labeled, regardless of whether the destination state requires such labeling.

See below Recommendation # 18 for comments

16. **Management of Radioactive Waste on site**
Drill cuttings that are radioactive should not be disposed of, spread on, nor incorporated into the soil 78.61(b) nor in pits §78.62, 78.63.

See below Recommendation # 18 for comments

17. Management of Radioactive Waste Materials to Disposal Sites
DEP should set standards for radiation monitor alarm set points. Trucks carrying above a certain limit must go to sites designated for radioactive waste.
Trucks below a certain radiation limit and volume might be allowed at a landfill site if the landfill meets at least the following features:

1. **the intensity and volume of radioactive substances in the landfill has not already reached a pre-determined limit set by the DEP, and verified by a third independent party.**
2. **The amounts of radioactivity and volumes are publically disclosed on a quarterly basis.**
3. **Residents within a 5 mile radius of the landfill are informed annually of the radioactivity status**
4. **The landfill monitors radiation on landfill perimeters and in storm run-off and streams nearby on at least a quarterly basis.**
5. **The landfill leachate does not move the radioactivity to sites other than those designed for radioactivity. For example, the landfill cannot send radioactive lechate to municipall waste water treatment plants.**

Radiation should be specifically addressed in the new regulations. Other regulations are not sufficient to guide the current oil and shale gas industry because of the uncertain status of various regulations and the use of varied terms. For example, the Solid Waste Management Act (35 P.S. §§6018.101-1003), referred to §78.58(d) has limited provisions for radiation.

Also, the *Guidance on Radioactivity Monitoring at Solid Waste Processing and Disposal Facilities* (Document 250-3100-001) was offered only as a best management practice in the absence of regulation. This *Guidance has many deficiencies:*

a. It carries no regulatory authority.
b. It is dated written in 2004,
c. It handles only small quantities of TENORM,
d. It did not anticipate the nature and volume of fracking waste disposed in landfills.

"Waste Disposal" (para 2) is among the topics included in this Act, yet omits two items. The Act omits 1) the handling, monitoring and storage of radioactive waste and 2) waste disposal in landfills an industry-accepted method of disposal of the waste of the hydraulic fracking process, fracking fluid and drill cuttings.

Current language of the Act calls this waste "contaminated" (e.g. §78.62), yet classifies it as "residual waste." Fracking fluid and drill cuttings in Pennsylvania are known to contain at least Radium-226, a radioactive material. Therefore provisions should be made for measuring radiation and handling waste appropriately. Radium-226 has a half-life of 1601 years and will forever remain to impact the health of residents and the environment.

The ACT fails to mention Radium-226, TENORM or the radioactive nature of this waste. In fact, "radioactive" is found once in the document in §78.123 regarding logs maintained on the well.

18. **The permit applicant, not the Department of Environmental Protection (DEP), should be responsible for determining whether proposed oil and gas operations would affect threatened or endangered species, through the use of an independent, professional analyst with a report provided to the DEP and the public. (Section 78.15(d))**

Protecting the habitat and physical safety of vulnerable species is a critical part of ensuring biodiversity and the quality of our environment. The federal Endangered Species Act was designed to achieve these goals by making it unlawful for any person to harass or take a listed species, including adversely affecting the habitat of a listed species in a manner that effects a take. Similarly, state law currently imposes the obligation on operators to ensure that their activities will not adversely affect listed species or their habitat.

The proposed regulations change that obligation by only requiring gas operators to mitigate the impact of their operations on threatened or endangered species if the DEP determines that the well site location will adversely impact species or "critical habitat."

Because an operator proposing an oil or gas project stands to gain financially from the project, and is in the best position to understand the scope and potential impact of its proposal, the operator (and not the DEP) should have the burden of paying for an independent party to determine whether its project would affect listed species and their habitat.

The analysis of the habitat and the species at risk can then be reviewed by the public.

19. Response to Comments

The DEP should respond to comments received about a permit that may affect an important public resource. (Section 78.15(d))

The proposed regulations allow for a public resource agency to receive notice of, and submit comments about, a proposed well permit that would affect its resources. The regulations, however, do not require the DEP to respond to those comments. To ensure that comments are adequately considered and that public resources are fully protected, the regulations should require the DEP to respond to comments submitted by public resource agencies.

20. Citizen and Environment Protection
The DEP should not compromise its obligation to protect citizens and the environment by balancing the citizens' constitutionally guaranteed right against private interests in oil and gas. (Section 78.15(g))

The DEP is required by the Pennsylvania Constitution to protect the public's right to a clean environment. The proposed regulations provide that even though the DEP determines that a proposed well will have a probable adverse impact on a public resource, the DEP still cannot impose conditions that will prevent or mitigate that harm without first considering the impact of the condition on the individual mineral right owner's ability to "optimally" develop his or her oil and gas rights. This regulation inappropriately places the DEP, whose mission is supposed to be to protect and conserve Pennsylvania's environment, in the position of balancing protection of important public resources against individual property rights. Furthermore, it inappropriately, and potentially illegally, elevates the "optimal" development of oil and gas over the protection of important public resources against likely adverse impacts. These draft regulations do not give proper weight to the DEP's constitutional obligation to protect the environment. So long as the DEP's actions do not affect a taking of private property, the DEP should be obligated to take whatever actions are necessary to condition permits in a manner that protects important public resources.

General Comments in support of recommendations to revise the proposed ammendments
The proposed amendments do not provide appropriate protection to the environment or the health and welfare of citizens of Pennsylvania.

In Pennsylvania, we have new shale gas wells within 2 miles of at least 190 day care facilities, 223 schools, and 5 hospitals. Many new shale wells are immediately above or adjacent to well water and municipal water supplies for over two million citizens and many wells are on or adjacent to property with critical public food supplies such as dairy herds. These herds put us fourth in the nation in milk production and top in the number of farms. The DEP has much to protect including a tourism industry of $33 billion and agribusiness of $32 billion. Hunting licenses alone collect almost $1 billion. All this depends on people trusting that our air, land and water are not contaminated or at risk for harm in the future.

The new technologies of shale oil and gas development have created health and environmental impacts scientists have just begun to document. A pattern of harm from normal operations and accidents is emerging. Over 161 letters have been sent out by the DEP to residents indicating water sources were contaminated by fracking. In just 2 years, from 2008 to 2010, the DEP recorded thousands of violations of environmental regulations and 241 were at well sites within 2 miles of day care centers and 40 within 2 miles of schools. Many peer reviewed scientific publications and records from the EPA, PA DEP, and agencies from other states document substantial contamination from deep shale oil and gas development in just the last decade, often originating from surface operations. These wells and their waste will be part of PA decades after the oil & gas are gone. We must limit the damage with clearer, more pro-active regulations.
Peer-reviewed scientific reports of impacts from shale gas development under normal operations:

McKenzie 2010 Univ. Colorado - persons living within ½ mile of fracking operations have an increased risk of disease-- both cancers and non-cancers-- due to exposure to airborn toxic chemicals from normal operations.

Adgate 2010 - Colorado School Public Health - chronic health risks near drilled areas were greatest (in order of prevalence) for neurological disease, hematological disease, respiratory effects, and developmental effects.

Mead 2012 – PA Academy Of Natural Sciences."As the density of well pads increased, the number of types of stream insects decreased,"

Hill 2012 - Cornell University – A 25 % increased prevalence of low birth weight and lower apgar scores occurred for babies of mothers who experienced their pregnancy near frack operations.

Currie 2014 - Princeton - Pennsylvania infants born within 2.5 kilometers of frack sites have higher incidence of low birth weight. The chances of a low apgar score doubled. (in Review)

Warner 2013 - Duke University study found methane 6 times higher and ethane 23 times higher if a home was within a kilometer of a gas well, probably through natural pathways underground.

Schug 2013 - University of Texas - Elevated concentrations of arsenic and selenium were in water closest to gas extraction sites.

Nagel 2013 - water samples from sites in a drilling dense region of Colorado exhibited more estrogenic, anti- estrogenic, or anti-androgenic activity than reference sites.

States – 2013 – Pittsburgh Water Authority – Industrial treatment facilities accepting oil and gas waste legally release bromides into source waters, raising drinking water contaminants above allowed limits.

Papers involving a mix of normal operations, poor management and/or accidents:

Osborn 2010 - Duke University - water wells within 1 mile of fracked gas wells had 17 times the methane as reference sites.

Bamberger 2012 – Cornell - farm animals with neurological, reproductive, and acute gastrointestinal problems after being exposed to fracking chemicals

Vengosh 2013 - Duke University - brine from Marcellus shale containing bromide and radioactive radium was incompletely treated and contaminated a PA river upstream from drinking water intakes.

Peer-reviewed Scientific Reports on General Risks

The Texas Commission on Environmental Quality – 2010 - fracking fluids. Associated health problems included: 65% of the chemicals were associated with serious health effects, 94% with skin, eye, and respiratory harm, 93% with gastrointestinal problems, 87% with respiratory system damage, 83% with brain and neurological effects

Colburn – 2011 – The Endocrine Exchange – Of the 300 chemicals used on a fracking well site, fluid, over 60% can harm the brain and nervous system, 40% are endocrine disrupting, 1/3 are suspected carcinogens and 1/3 are developmental toxicants.

3042

Summary from Testimony of Ralph Kisberg, 1736 Almond St., Williamsport

To: Pennsylvania Environmental Quality Board
Public Comment on Rulemaking Amendments to 25 Pa. Code Chapter 78

Conventional Well Operators: Please study the Regulatory Analysis Form. If some small operators cannot afford to comply with the very limited number of proposed regulations applicable to them, (5), the harsh reality is that their resource production in the current era is insignificant. Their industry's history and legacy of environmental degradation is not.

Section 78.51 (2) regarding the restoration and replacement of contaminated water supplies: I suggest you delete the word "or" after the word "ACT", and replace it with the word "and". Operators tell us they do not affect water supplies often if at all. Why would it be much of burden to them to restore or improve water quality in so few situations where innocent landowners suffered and the problem was carefully determined to be an operator's fault? An improvement is not unreasonable concept.

Section 78.52a, Abandoned and orphaned well identification: Increase the distances measured from the surface above the horizontal well bores to 1,400'. This recommendation is derived from an explanation given by the Shell rep at the TAB meeting in State College of the maximum distance the energy in a frac operation can penetrate the rock around it. I suggest you look up the testimony to derive a distance based on science rather than an arbitrary, inadequate rounded figure. Shell's error in not identifying an abandoned well in Tioga Co. cost them dearly, I hope the board learns from their experience and listens to or reads carefully the brief lecture.

Section 78.15 (g). The Pennsylvania Constitution requires DEP to protect the public's environmental rights. I believe you are setting up a future problem with the word "optimal". That clause may be interpreted by well operators to argue that even if DEP determines a proposed well or access road will have a probable adverse impact on a public resource, it still cannot impose conditions that will prevent or mitigate that harm without first considering the impact of the condition on the individual mineral right owner's ability to "optimally" develop his or her oil and gas rights.

That reading of the regulation elevates the operator's definition of the concept of "optimal" development of oil and gas over the protection of public resources against likely adverse impacts, i.e. the public's concept of "optimal" development. If DEP's conditions do not constitute a taking of private property, the agency is obligated to condition permits protectively.

March 14th, 2014

Comments of Ralph Kisberg
1736 Almond St.
Williamsport, PA 17701
rkisberg@gmail.com

To: Pennsylvania Environmental Quality Board
Re: Public Comment on Rulemaking Amendments to 25 Pa. Code Chapter 78

Thank you for the opportunity to address the Board. This comment is a later version of the one I turned in at the EQB hearing in Williamsport in January. It has been re-worked in a small number of places with changes that are designed to clarify the arguments. The changes or additions are noted by underlining.

In preparation for this comment, I attended both days of the Technical Assistance Board meetings in State College back in August. There I listened to and talked with a number of small conventional drillers. They were upset about the costs of some of the proposed amendments. I was empathetic at first, but in studying the Regulatory Analysis Form completed by the DEP, it is clear the estimated figures are not unfair or uncompetitive expenses given the volume and value of the hydrocarbons produced in the Commonwealth currently and for the foreseeable future. I respectfully suggest you study that well crafted form thoroughly.

Yes, some small conventional well operators will go out of business. But if they cannot afford to comply with the very limited number of proposed regulations DEP has deemed applicable to them, the harsh reality is that their resource production in the current era is insignificant. Whereas their industry's history and legacy of environmental degradation unfortunately, is not. As the DEP phrased it, "the costs of reasonable environmental protective measures are relatively small compared to the costs associated with cleaning up a release of pollutional substance into the environment and restoring the impacted area."

Given the emphasis on jobs the advent of the unconventional gas industry has contributed to our state's economic projections, the potential job loss from the effects of the 5 sections of proposed regulations on the operators of conventional oil and gas well sites now in the Commonwealth will undoubtedly be offered as reason to exempt small business operators, or to water down the regulations for all. It is important to point out what the

reality of living with unconventional gas development has taught communities like ours; its cyclical nature, it's extremely high job turnover and need for personal to fill those vacated jobs. Eventually, somewhere there will another job for the competent, trustworthy and hardworking who want to stay in the industry. It may be many miles, or even states away for any given time, but that is the nature of work in the modern oil and gas industry.

Searching out the mission of your board, I see that at the top of the list is the charge to, " Develop a Master Environmental Plan for the Commonwealth". I apologize, but I do not know the state of that objective given the relatively new and environmentally overwhelming addition of the unconventional gas business. If the Master Plan has not yet been updated, I trust it is on your agenda soon and that it will be done welcoming public participation, as is being done tonight. It will certainly be a daunting task.

One important aspect of gas development we who live with it realize others out of the target counties may not yet comprehend, is the relative inefficiency of the current preferred extraction method for shale gas. In a public hearing last year in Fairfield Township here in Lycoming County, Tom Irwin, Operations Manager for Inflection Energy, a 30 year industry veteran and a fine addition to our community, testified under oath, in response to a question about how much gas is extracted from a targeted area through hydraulic fracturing of one of his company's horizontal wells here in the Marcellus shale, that about 15% of the gas will be extracted (my recollection of Tom's exact phrasing is not precise, but his answer and the 15% figure is a matter of public record).

Other operators have claimed up to 25% in print, but the point is, now, only 13 years or so into significant commercial production of shale gas anywhere in the world, there is a lot of gas left in the ground. No one is naïve enough to believe the large multinational corporations that have flocked to our Commonwealth will be satisfied with 15% or even 25% of their rights. Extraction methods evolve, new technologies come along, market conditions change. All that can be projected is that when it is possible to make money by re-entering the formation it will occur in the same places it has already, and new areas previously deemed uneconomic will also be targeted.

In the spring of 2012, an Environmental education and advocacy coalition I belong to, the Responsible Drilling Alliance, based here in Williamsport, was invited to give presentations on shale gas development to the 4th, 5th and 6th graders of the Wyalusing Elementary School in the

Commonwealth's heaviest drilled county, Bradford. One of the children, a 5th grade young lady, reflected the attitude of many of her schoolmates when she asked, in a somewhat hopeful but slightly frustrated manner, " When are they going to leave?"

It was a question none of the 3 of us, a former educator, a retired chemical safety engineer, and a former manager of thousands of acres of forested property for a Native American tribe, could answer.

One of the results of still being haunted by the tone in that young voice, is a commitment by all 3 of us and others in our organization, known as the Responsible Drilling Alliance, to a future Pennsylvania that still honors the origins of our Commonwealth's name. We work hard in the hope current generations leave a legacy for those who follow that fulfills their right to clean air, pure water, and the natural, scenic, historic and esthetic values of the environment we enjoyed here for so long.

One way to help accomplish that, though it is not part of the current revisions, is for you to consider, for another time, an element of shale gas development not covered by any statute or regulation yet; that of well pad spacing. As an example of that sweet 5th graders frustration, take a drive north of Williamsport into Gamble Township to the north end of Sugar Camp Road and follow it along as it turns slightly right into Calvert Road. You will find on your right, starting near the beginning of Calvert Rd., a series of 3 well pads as you proceed north, two on the east side operated by Atlas Energy, within .4 mi of each other, followed by an Anadarko Pad another .2 mi on the west side of the narrow lane.

Certainly the question of well pad spacing needs to be taken up eventually, as does the question of a more protective aggregation policy in regards to air quality. In the mean time, many of the current proposed amendments are positive steps towards the promise of Article 1, Section 27 of the Pennsylvania Constitution. There are also many others that need to improved before they are codified.

Section 78.51 (2) regarding the restoration and replacement of contaminated water supplies is a proposed standard all Pennsylvanians can be proud of with one small change: "The quality of a restored or replaced water supply will be deemed adequate if it meets the standards established under the Pennsylvania Safe Drinking Water Act or is comparable to the quality of the water supply before it was affected by the operator if that water supply exceeded those standards."

In order to make the above section clear, delete the word "or" after the word "ACT", and replace it with the word "and". Operators tell us they do not affect water supplies often if at all, so why should this section be a burden to them? Put yourselves in the position of a small acreage property owner, who finds, as has happened to a number of families in Bradford County for example, that their biggest investment and source of future financial security, their home, has been severely devalued by a proven, determined, impacted water supply diminution. Since this is obviously a rare occurrence, given the stress and difficulty dealing with temporary solutions like bottled water and water buffalo's (and the not insignificant expense of the electricity to heat them in cold months) over extended periods of time until a determination can be made by DEP, why should the industry object to restoring pre-impact water quality or better if it was substandard to being with for people they have so inconvenienced and stressed? Why should the Commonwealth not want to see families saga end with them getting back to where they were before those responsible for the problem impacted their quality of life if their water quality was good, or be better off if their previous water quality was substandard?

Section 78.52a, Abandoned and orphaned well identification, is an example of a good start on a rule to address a problem we have seen twice in this area. In Forks Township in Sullivan County a 7,000' abandoned well from the 1950's had to be plugged in 2012 after DEP detected combustible gas at the surface of the ground above the BJ Broschart well and in a number of homes and a stream in the vicinity. As the well had no viable operator, the DEP assumed the responsibility of plugging the well through the Orphaned Well Plugging Fund. I believe the situation is still under investigation by the department, but DEP NC Regional Office Spokesperson Dan Spadoni summed up the situation clearly with a statement in October of 2012,"Had we not taken this action, this well would have simply been added to the list of thousands of orphaned wells waiting to be plugged, and it could have taken many years". What Dan Spadoni didn't say was the obvious, that the moving of this plugging to the top of the list took away funds from plugging another well, or possibly many, as the cost of this well plugging was reported to be $100,000.

In order for abandoned wells to be more easily avoided, I believe DEP should have operators identify existing wells before wells are spudded, instead of, "prior to hydraulic fracturing" as the language in the section currently reads. That will insure a choice could be made to alter horizontal well bore paths prior to drilling if fracing them could potentially cause a problem with communication with an abandoned deep well. While it is true

that about half of all wells permitted in a given year do not get drilled in that year, DEP estimate's the cost to unconventional operators for identifying these wells at $2,000 per gas well, a drop in the bucket compared to the total cost of developing a well to production, and money that will have to be spent eventually.

Another change that will help insure a more effective survey is undertaken is to increase the distances measured from the surface above the horizontal well bores to 1,400' from the current language's 1,000'. This recommendation is derived from an explanation given by a representative of the Shell Corporation at the TAB meeting in State College of the maximum distance the energy in a frac operation can penetrate the rock around it, which I believe was stated to be 1,400'. This statement involved the limitations due to the laws of physics. I suggest you look up the testimony to derive a distance based on science, rather than approve an arbitrary rounded figure of 1,000'.

In Section 78.59c(g)(2) the draft regulations appear to require one monitoring well hydraulically upgradient from a centralized impoundment and a minimum of 3 three monitoring wells downgradient. The catastrophic failure of the impoundment liner on the Phoenix Resources property on the Landfill in Duncan Township in Tioga County provides a fine example of why monitoring wells are necessary and can provide alerts to toxic infiltration of groundwater from underneath liners. These liners do leak and the 75 -100 holes discovered upon draining of the liner on the Phoenix Pad S impoundment also shows that, due to the allowable definition of "freshwater" to contain pollutional substances, those ponds built to lesser construction standards should too require the minimum monitoring wells required for the higher standard of construction centralized impoundments.

Section 78.59c(e)(3)(i) states a leak detection system is required that rapidly detects and collects liquid entering the leak detection zone, and rapidly transmits the liquid to a sump. Though it is not specified how the system to run the monitoring and pump is powered, it is recommended the regulation add a backup power system requirement.

In general, the industry track record on open impoundments containing toxic fluids is not great for a variety of reasons. Not all operators use them, in this area. Chief, who came in early, never use them from early on. Large operators in the Commonwealth like Chesapeake and Cabot do not use them. Numerous operators have moved away from them, which in itself is proof they are not best practices. In June of 2013, Representative Boback introduced HB 1546 to prohibit the use of open impoundments for storage

of produced liquids, treated water, hydraulic fracturing fluid or industrial waste. This would seem a good indication of where things are moving. Why not rule them out now?

In Sec 78.15F, the 15 day requirement to assess and submit comments to DEP doesn't seem to give agencies enough time to adequately do their job and properly satisfy their agency mission. The addition of oil and gas operations on public land has strained DCNR staff as exampled by the number of leased tracts in the Tiadaghton State Forest here in our county. Huge game land tracts like SGL75 in Lycoming County now slated for gas development too certainly will stretch the resources of that agency's staff that in addition to regular duties, now have an added burden. The supervisors and field workers of the agencies should be given more consideration in determining a realistic time frame. As should municipalities that usually meet only once a month and should be given at least that amount of time to review permit applications.

Under Act 13, an operator can obtain a single blanket bond in the amount of $600,000 that covers all of their well sites in the Commonwealth. Though DEP cannot require higher bonding, something the Commonwealth absolutely needs to revisit due to more data now available as to actual well plugging costs of deep shale wells, bonding is designed to secure all of the operator's legal duties for potential water supply replacement, for site restoration and for well-plugging. For now, DEP at least should establish a process that ensures operators are not released from liability for well sites until those sites are properly restored.

The proposed revised bonding regulations in Subchapter G of Chapter 78 do not do this. Release from liability is conditioned only by filing of a certificate of plugging. Release from liability should also be conditioned on the adequate final restoration of the well site after the last well on the site has been plugged.

Based on a presentation arranged by the Sullivan County Energy Task Force in the winter of 2012 on well casing cementing and well plugging, it appears to me the Commonwealth also needs to re-visit well bonding requirements to insure adequate funds are placed in trust for investment so as to insure money is available for future generations to re-plug wells in far distant eras when cementing has deteriorated to the point where re-plugging becomes necessary.

As described to the us that day in Laporte by a cementing company professional, much like a gravesite in a cemetery, perpetual care will be

required over multiple centuries for plugged wells. A thoughtfully designed perpetual care fund would probably not be a great expense to operators and its available investment capital could be lent to operators specifically for environmental upgrades that rational economic choice may put on the back burner, but would benefit the environmental quality of the Commonwealth while helping the operators bottom line. For instance gas fired mobile compressors at the well site for fracking, conversion of company vehicles to run on NG, or "green completion" systems. Or loaned to citizens for energy efficiency or conservation projects that would provide a rate of return adequate to grow the fund.

The current draft regulations in Section 78.59c prohibit well operators from building "centralized impoundments" for wastewater within 100 feet of any "solid blue line stream" that flows year round. The appropriate distance may be debatable, but any buffer should be extended to streams that do not flow continuously. Intermittent streams need to be protected as even though water may not be flowing on the surface at all times, in all likelihood it is still travelling downhill underground below the watercourse, often very close to the surface. The DEP has an obligation to protect intermittent streams under the Clean Streams Law.

Section 78.62 draft regulations allow well operators to dispose of residual waste, including drill cuttings, in pits at the well site as long as they comply with certain requirements. As waste generated at oil and gas drill sites is exempt from hazardous waste regulations, the result is hazardous waste can be managed as residual waste and disposed at well sites with a single synthetic liner and no long-term groundwater monitoring. These minimal protections are inadequate.

There was a problem with contamination leaking from a buried waste pit on a leased tract in the Tiadaghton State Forest a couple if years ago. I did not have time to re-access the file I have read in the past, but I believe the problem came from the legal burial of drill cuttings from a well pad that is situated on the mountain above the village of Ramsey on the east side of Pine Creek.

Finally, I am deeply concerned about the wording of Section 78.15 (g). The Pennsylvania Constitution requires DEP to protect the public's environmental rights. 78.15 (g) states, "...the Department may condition a well permit if it determines that the proposed well site or access road poses a probable harmful impact to a public resource." The wording problem lies in the first clause of the following sentence, " Section 3215(e) of Act 13 requires the Department to consider the impact of the condition

on the applicant's ability to exercise its property rights to ensure optimal development of the resources..."

With Section 3215(e) of Act 13 currently enjoined due to lack of severability, I am not sure about the need to make this point, but in case: That clause may possibly be interpreted by well operators to read that even if DEP determines a proposed well or access road will have a probable adverse impact on a public resource, it still cannot impose conditions that will prevent or mitigate that harm without first considering the impact of the condition on the individual mineral right owner's ability to "optimally" develop his or her oil and gas rights.

That reading of the regulation would place the DEP directly in opposition to its mission, " to protect Pennsylvania's air, land, and water from pollution and to provide for the health and safety of its citizens through a cleaner environment." It elevates the operators definition of the concept "optimal" development of oil and gas, over the protection of public resources against likely adverse impacts, i.e. the public's definition of the concept of "optimal" development. As long as DEP's conditions do not constitute a taking of private property, the agency is obligated to condition permits in a manner that protects public resources, optimal development for the public, not the operator. This distinction needs to be made clear from the outset to avoid legal parsing of the intent of the regulation by operators.