



1. Application requirements pertaining to public resources

DEP has added “common areas on a school’s property or playground” to the list of “public resources” that require additional consideration when permitting oil and gas wells (Section 78.15, 78a.15). This would mean that any applicant proposing to construct a conventional or unconventional well in a way that would cause disturbance within 200 feet of such areas would need to provide specific information to DEP, including measures to reduce negative environmental impacts. This regulation would also allow DEP to add requirements to a permit in order to prevent impacts.

This is a positive step that signals recognition by DEP of the risks posed to children and others who spend time on school property. The 200-foot distance applies to the “limit of disturbance,” which could include access roads, tanks, pits, etc.—not just the wellbore. However, **the proposed regulation is not a setback and would not automatically restrict the ability of oil and gas operators to conduct their activities near schools.**

Even if protective practices are used (e.g., sound barriers or emissions controls), the distance restriction of 200 feet is too small to substantially reduce impacts. In general, the closer to the source of pollution (e.g., a well or tank), the greater the potential for exposure to contaminants and the likelihood of impacts to health. **But there is no scientifically definitive distance at which air contaminants cause health impacts, nor an established distance beyond which they would never occur.**

At the same time, recent studies suggest the potential for contamination at much longer distances than the requirements included in Chapter 78 and Chapter 78a proposed regulations. A study by the City of Ft. Worth on air quality in gas fields found concentrations of formaldehyde above state regulatory standards 750 feet beyond the site’s fence line.¹ Air modeling conducted in Pennsylvania showed nitrogen oxide above state regulatory standards up to one mile of the Barto Compressor Station in Lycoming County.² A Colorado School of Public Health study of air emissions around gas well operations found that residents living less than a half mile away are at higher risk of respiratory, neurological, and other health impacts and have a higher lifetime risk for cancer, based on exposure to pollutants, than those who live at farther distances.³

Most recently, a study by researchers at Oregon State University and the University of Cincinnati found that residents living closest to active oil and gas wells had an exposure risk for polycyclic aromatic hydrocarbons—known to cause cancer and respiratory problems—higher than the federal acceptable risk level and that risk estimates decreased 30% at distances more than one mile.⁴

Similarly, Earthworks’ survey of health impacts in Pennsylvania found that as the distance from gas wells and facilities decreased, the percentage of respondents reporting specific health symptoms (such as throat irritation and headaches) increased.⁵ In addition, recent research underscores the

role that landscape, wind and weather conditions, and the stage of production play in determining the intensity of exposure and, in particular, how both episodic events (e.g., compressor station blowdowns) and repeated exposure can worsen health effects.⁶

Also concerning are limitations included in the public resource regulations that could hamper its actual implementation:

- DEP would have discretion over whether or not to implement the regulation.
- If an operator appeals permit conditions, DEP would bear the burden of proof in demonstrating that the conditions are warranted.
- DEP would have to consider an operator's property rights and any restriction on the "optimal development" of oil and gas when deciding whether to impose permit conditions.

Finally, given the agency's limited staff and resources, it is possible that permit reviews would not include a comprehensive consideration of environmental and health impacts. In turn, there is less likelihood that permit conditions related specifically to public resources would be imposed. This is particularly concerning in light of the 2012 Executive Order imposed by Governor Corbett that requires DEP to establish timeframes within which permit applications must be reviewed. Known as the Permit Decision Guarantee, the order aims to ensure that permits are processed "as expeditiously as possible" and makes "compliance with the review deadlines a factor in any job performance evaluations."⁷ Under the policy, a basic drill and operate well permit must be issued in no more than 32 days.

2. Distance of centralized tank storage from schools

The final draft of Chapter 78/78a includes the first oil and gas regulations specifically for centralized tank sites (also called tank farms), where large volumes of waste would be stored and treated for reuse or prior to disposal. These regulations (sections 78.57 and 78a.57) fulfill a request made by many organizations in the previous round of comments: that if DEP planned to permit waste storage in tanks, regulations must be adopted to govern the practice.

The proposed regulations would prohibit construction of any portion of a centralized tank storage site within 300 yards of buildings owned by school districts that are "used for instructional purposes, a park, or a playground." The rationale behind this distance is not clear; all other setbacks related to tank storage sites are shorter distances given in feet.

Given the inherent risks of leaks and spills posed by pits and impoundments, tanks may be a preferable method of waste storage. However, they contain contaminated and potentially toxic substances (e.g., flowback and fracturing fluids) and can cause pollution, especially if they are improperly constructed or not inspected frequently. **DEP's proposed regulations would allow open-air tanks, which could generate harmful emissions, and do not specify how emissions generated by regular use of or venting from tanks would be controlled.**

In addition, just as with well pads and centralized impoundments, many operators across a wide geographic area could use centralized tank storage sites. This would inevitably spur increases in roads and traffic during both construction and daily operations—in turn raising the risk of air pollution, accidents, and spills.

In conclusion, the proposed regulations are limited and their application discretionary, while the proposed distances (200 feet and 300 yards) are far too small to offer protection to both the children and adults who spend time at schools. To improve protection from pollution, noise, and

light and safety from traffic, accidents, and explosions, **DEP should require, at minimum, a one-mile setback of oil and gas wells, waste storage facilities, and any other infrastructure from the property boundary of any school property.** This setback should also be applied to locations where other vulnerable populations reside, including nursing homes, hospitals, day care centers, and communities at a disproportionate risk of health impacts (such as environmental justice areas).

¹ Eastern Research Group, Inc. and Sage Environmental Consulting, L.P., 2011. *City of Fort Worth Natural Gas Air Quality Study, Final Report*. http://fortworthtexas.gov/uploadedFiles/Gas_Wells/AirQualityStudy_final.pdf.

² AMI Environmental for the Clean Air Council, 2013. *AERMOD Modeling of NO2 Impacts of the Barto Compressor Station*. www.pennfuture.org/UserFiles/File/MineDrill/Marcellus/CAC_EmissionsNO2_CompressorBarto_20130124.pdf.

³ Lisa M. McKenzie, Roxana Z. Witter, Lee S. Newman and John L. Adgate, Human health risk assessment of air emissions from development of unconventional natural gas resources. *Science of the Total Environment* March 21, 2012. The authors also noted that results are uncertain since “the actual distance at which residents may experience greater exposures from air emissions may be less than or greater than a 1/2 mile, depending on dispersion and local topography and meteorology.”

⁴ L. Blair Paulik, Carey E. Donald, Brian W. Smith, Lane G. Tidwell, Kevin A. Hobbie, Laurel Kincl, Erin N. Haynes, Kim A. Anderson. “Impact of Natural Gas Extraction on PAH Levels in Ambient Air.” *Environmental Science & Technology*, 2015.

⁵ Nadia Steinzor, Wilma Subra, and Lisa Sumi, “Investigating Links Between Shale Gas Development and Health Impacts through a Community Survey Project in Pennsylvania.” *NEW SOLUTIONS*, Vol. 23(1), 2013. .

⁶ David Brown, Beth Weinberger, Celia Lewis, and Heather Bonaparte. “Understanding exposure from natural gas drilling puts current air standards to the test.” *Reviews on Environmental Health*, March 2014.

⁷ Office of the Governor, Executive Order 2012-11, “Permit Decision Guarantee for the Department of Environmental Protection.” Pennsylvania Office of Administration, records and directives.