Pennsylvania Environmental Quality Board New Regulations for Oil and Gas Well Casing and Cementing (Amendments to Chapter 78)

Plain Language Summary

In this document, the words "rules" and "regulations" have the same meaning.

The new regulations were finalized on February 12, 2011. These new regulations will update existing rules for drilling, casing, cementing, testing, monitoring, and plugging of oil and gas wells. The new regulations will also update rules for protecting public and private water supplies.

Please look at the attached diagram and definitions which will help clarify this summary.

Background Information

Proper casing and cementing of oil and gas wells is very important to protect water supplies and improve public safety. Many of the existing regulations on gas well construction and water supply replacement were created in July 1989 and, for the most part, have not been changed.

The Pennsylvania Department of Environmental Protection (DEP) evaluated the existing regulations because of new drilling and construction practices for Marcellus Shale wells. There have also been incidents with Marcellus wells that affected drinking water supplies. Current rules do not provide enough details on safely casing and cementing wells. Also, previous rules did not address the need for an immediate response by operators to a gas leak complaint. And, they did not require operators to inspect wells regularly.

DEP shared the initial draft of the proposed regulations with companies and environmental groups. We received many comments on how to improve water quality and the quantity of replacement water supplies. Other comments were related to the practices commonly used to cement and case wells. Since most gas leaks are caused by poorly cemented casing, DEP decided to address this issue quickly, in order to add another layer of protection to public health and the environment. Addressing this issue now will protect public health and the quality of drinking water.

DEP also received comments on many other important environmental concerns related to oil and gas wells, and these concerns will be addressed at a future round of rulemaking.

What is Gas Migration or Stray Natural Gas Migration? In improperly operated, poorly constructed or deteriorated wells, natural gas may move from the wellbore. This is called gas migration. Migrating gas can affect water supplies, as well as potentially accumulate inside or next to structures such as residences, businesses and farming operations. This could create a risk of a fire or explosion. Gas migration may become a threat to the health, safety and welfare of the public.

What is Casing and Cementing? Casing is a steel pipe inserted in the well to keep gas or oil in the well. It is made out of a series of metal tubes installed in the newly drilled hole. Cementing is the practice of pumping cement down between the casing and the wellbore wall to hold it in place and prevent gas from leaking.

What are the New Rules?

The new rules relate to:

- The revised regulations have been expanded from Marcellus Shale to now include all Unconventional Formations (other natural gas formations)
- Casing and Cementing
- Reporting requirements for design, construction, operation, monitoring, plugging, water supply replacement, and gas migration
- New material specifications
- Blow-out prevention
- Performance testing

The new rules will reduce gas migration and provide more protection for both public and private water supplies.

- Properly cementing and casing a well is very important to prevent gas migration. The new casing and cementing requirements will provide more protection for home or property owners, and water supplies. These construction standards are similar to standards that have already been adopted in other states such as New York, West Virginia, Ohio, Texas, Oklahoma, Louisiana, Kansas and Montana, and reflect common industry practice.

- If a public or private water supply (for example, a private water well) is polluted or reduced, the operator must restore or replace it with a source that meets drinking water standards or is as good as the previous supply. If the cost to operate and maintain the new water supply is higher, the operator will pay for the increase permanently. If the previous quality of their water exceeded safe drinking water standards, affected parties may take legal action to have their water supply restored to its original quality.

- The Oil and Gas Act presumes that an operator has polluted the water supply if the contamination occurs within 6 months of drilling the well and the gas or oil well is within 1,000 feet of the water supply, unless the operator has taken a sample from the water supply that shows it was contaminated before drilling. If a homeowner refuses to let the operator take the sample, the operator is not presumed to have impacted the water supply. For this reason, it is important for water supply owners to allow well operators to take a sample from the water supply. The water supply owner should ask the operator for a copy of the lab test results. If the operator is contacted first, they must call DEP within 24 hours to report a potential incident of contamination.

- Operators must inspect all of their wells every three months and report the results to DEP every year. If the inspection shows the casing is not working properly, or there are signs of leaks or too much pressure within the wellbore, the operator must immediately notify DEP and fix the problem.

- The revised regulations set procedures for the operator and the Department must follow if gas migration occurs.

- Before drilling a well, operators will need to have a casing and cementing plan that shows how the well will be drilled and completed. Some of the new requirements are:

    - Centralizers, which keep the casing centered in the wellbore, must be used at set locations to make sure that cement is evenly distributed between the casing and the wellbore.

- Casing cement must meet the American Society of Testing Materials (ASTM) or the American Petroleum Institution (API) standards for oil and gas wells. The cement is used to secure the casing, protect the groundwater as well as resist the pressure from drilling and operating the well.

- The revised regulations require all casing used in the well to meet strict pressure testing limits. All Unconventional Formation wells must have blow-out preventers. The new regulations that relate to blow-out preventers:
    - Clearly define when blow-out prevention equipment must be used.
    - Require blow-out preventers to have emergency controls located 50 feet away from the drilling area to be safely shot down in case of an emergency.
    - Explain how defective equipment must be treated.
    - Specify the training a person must have in order to use the equipment.

- Documentation of cement quality and cementing practices used at each well must be kept for DEP's inspection.

- The new regulations require operators to investigate gas migration complaints quickly and to notify DEP. If high levels of natural gas are found, the operator must call emergency responders immediately and take action to correct the situation.

- DEP may modify construction and plugging requirements when existing regulations do not provide sufficient protection of the environment.

- DEP may set additional drilling and operational requirements for specific geographic areas based on the local conditions.

- The operator is now required to list the following in the well's completion report:

    - A descriptive list of chemical additives in the fracking fluid
    - Percent by volume of the each chemical additive
    - List of the chemicals in the MSDS sheets
    - The percent volume of the chemicals listed in the MSDS
    - Total volume of water used the list source(s) of the water
    - The pump rate and pressure used in the well

- Every six months, the drilling company will have to report how much natural gas has been produced. DEP will make this information available to the public on the Department's Oil and Gas website. Please visit: http://www.depweb.state.pa.us click on Oil and Gas (*information will be available within a few months*).

Benefits of the REVISED Regulations

- More protection for home or property owners

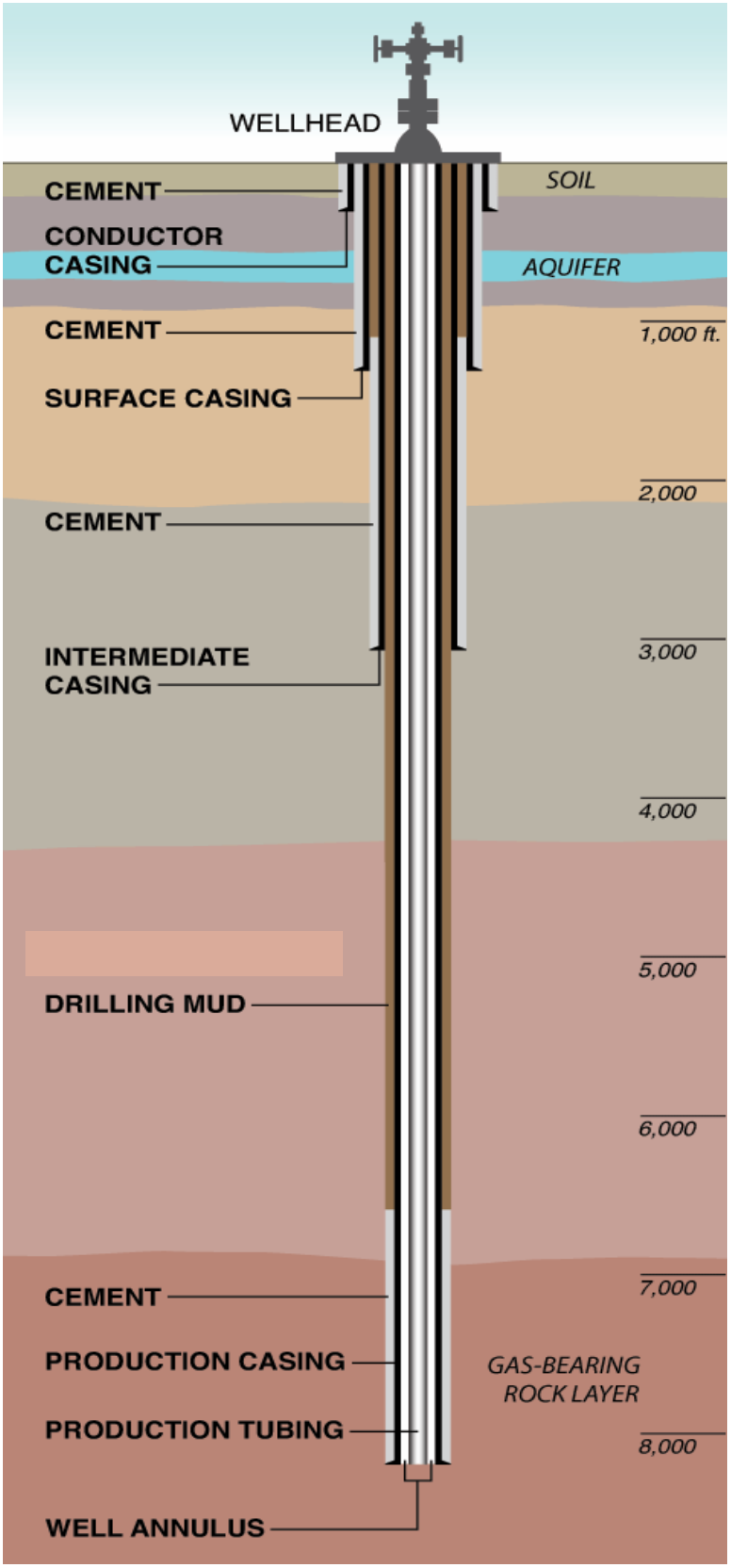
- More protection of water sources, both public and private

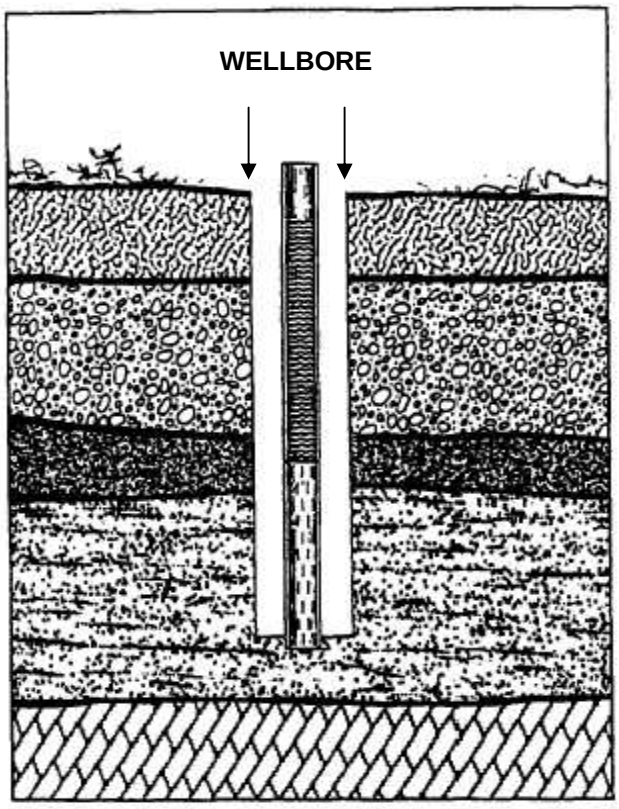
- Early detection of construction problems and more reporting will increase safety and protection of human health and the environment

- Less chance of natural gas escaping the well (gas migration)

- Provide specific steps for responding to an emergency

Diagram of a Natural Gas Well





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DEFINITIONS

Wellbore (or drill hole) - A wellbore is any hole drilled for the purpose of extraction of natural resources such as water, gas or oil.

Casing - A steel pipe inserted in the well to keep gas, oil and other fluids in the well. It is made out of a series of metal tubes installed in the newly drilled hole.

Cementing - the practice of pumping cement down between the casing and the wellbore wall to hold it in place and prevent gas from leaking.

Plugging – The use of cement and other materials to permanently seal the well.

Water supply – A source of water for human consumption or use, or for agricultural, commercial or industrial use.

Gas migration – Unintended movement of natural gas from the wellbore due to poorly constructed or deteriorated wells.

Material specifications – A clear set of requirements that a material, product, or service needs to meet (for example, cement used in wells). If that material fails to meet one or more of those requirements, it may be referred to as being out of specification.

Blow-out preventers - A large valve or series of valves that can close an active oil or natural gas well. If underground pressure forces oil or gas into the wellbore, operators can close the valves remotely to prevent a blowout, and regain control of the wellbore.

Performance testing - It involves testing for safety, reliability and to confirm that the device meets the standards.

Unconventional Formations - Formations that typically produce gas through the use of fracking such as the Rhinestreet, Burket, Marcellus, Mandata and Utica Shale formations, or other formations identified by the Department.