LICENSING OF BLASTERS AND STORAGE, HANDLING AND USE OF EXPLOSIVES

PROPOSED RULEMAKING

25 PA CODE CHAPTERS 210 AND 211

COMMENT AND RESPONSE DOCUMENT

Re: Proposed Rulemaking: <u>Licensing of Blasters and Storage, Handling and Use of Explosives (#7-349)</u>

This is a list of corporations, organizations and interested individuals from whom the Environmental Quality Board has received comments regarding the above referenced regulation.

ID	Name/Address	Zip	Submitted 1 pg Summary	Provided Testimony	Req Final Rulemaking
1	Mr. Keith Pucalik Vibra-Tech Engineers, Inc. 359 Northgate Drive Warrendale, PA	15086		T	
2	Messrs. Jay Elkin and Ed King Wampum Hardware 636 Payden Road New Galilee, PA	16141		T	
3	William B. Boots, ARM, CSHM Senior Loss Control Consultant HRH Risk Management USX Tower, Suite 5500 600 Grant Street Pittsburgh, PA	15219		T	
4	David Harrison, Regional V.P. Dr. Edward J. Walter & Assoc., Inc. P.O. Box 544 Gibsonia, PA	15044-0544		T	
5	Mr. Ron Frye Hall Explosives 2981 Elizabethtown Road Hershey, PA	17033		T	
6	Mr. Kirk Whitaker SENEX Corp. 710 Millers Run Road Cuddy, PA	15031		T	
7	Mr. Alvin L. Best RFI Energy, Inc. P.O. Box 162 Sligo, PA	16255		T	
8	Breck Neeper D.C. Guelich Explosive Co. R.D. 3, Box 125 Clearfield, PA	16830		T	X
9	Mr. Jim Shuster Brubacher Excavating, Inc. 825 Reading Road Bowmansville, PA	17507		T	
10	Gilbert M. Freedman, P.E. 49 Sample Bridge Road Mechanicsburg, PA	17055-2386	S		X
11	Mr. James A. Elkin BL 4088 Wampum Hardware Co. 636 Paden Road New Galilee, PA	16141			
12	Mr. Richard F. Tallini 3343 Brantford Rd. Toledo, OH	43606			

13	Pa. One Call System, Inc. c/o Mr. William P. Boswell McGuire Woods LLP CNG Tower 625 Liberty Avenue, 23rd Floor Pittsburgh, PA	15222-3142	S		
14	Mr. Michael G. Young Director of Regulatory Affairs Pennsylvania Coal Association 212 North Third Street, Suite 102 Harrisburg, PA	17101	S		X
15	Daniel Ray Leach, President Hall Explosives Inc. 2981 Elizabethtown Road Hershey, PA	17033			
16	Michael F. Salley, P.E. 106 Center Street Forty Four, PA	18704-5018			
17	Mr. David Harrison Dr. Edward J. Walter & Assoc., Inc. P.O. Box 544 Gibsonia, PA	15044			
18	Dennis Kisthart, Regulatory Chairperson Daniel Ray Leach, Program Chairperson Randy May, President Eastern Pennsylvania Chapter Society of Explosives Engineers 559 Nor Bath Blvd. Northampton, PA	18067			
19	Mr. Randall S. May Maurer & Scott, Inc. Blasting Committee Chairman c/o Pennsylvania Aggregates and Concrete Assn. 3509 North Front Street Harrisburg, PA	17110-1438			
20	Independent Regulatory Review Commission 14th Floor 333 Market Street Harrisburg, PA	17101			

COMMENTS AND RESPONSES

GENERAL

Comment: A reference should be included in the regulation to 73 P.S. §176 *et seq*. to clearly establish that blasters are also required to comply with this state law with regard to notification of the Pennsylvania One Call System. (13)

Response: 73 P.S. §179 and 180 require the contractor and designer to contact Pennsylvania One Call. Blasting activities are subordinate to excavation activities. Furthermore, blasters are not considered contractors or designers. To avoid confusion over who contacts Pennsylvania One Call, the entity responsible for the excavation should contact Pennsylvania One Call and inform them if blasting activities are anticipated.

CHAPTER 210

§210.13. General.

§210.13(b)

Comment: Subsection (b) states that certain individuals may be exempted from obtaining a blaster's license if they are detonating "extremely small amounts of explosives." What qualifies as "extremely small amounts of explosives?" (20)

Response: The Department is not obligated to license all persons conducting blasting activities. In most industrial and research applications, the quantities of explosives and blasting operations are such that limited risk is posed to the blaster or anyone in the vicinity of the blasting activity. Due to many variables, it is impossible to set an arbitrary limit on what constitutes "extremely small amounts of explosives". Exemptions from the licensing requirement will be based on risk rather than an arbitrarily established amount of explosives. Risk will be determined by Department review.

§210.14. Eligibility requirements.

§210.14(b)(1)

Comment: The term "good moral character" is vague. What degree of proof will be required and how will a determination of "good moral character" be made? (14) (15) (18) (20)

Response: The Department agrees that the term "good moral character" is vague and difficult to determine. The Department has deleted §210.14(b)(1) from the regulations.

§210.14(b)(2)

Comment: The wording in the qualifications for eligibility blasting license stated that the applicant should demonstrate a lack of intention to comply with Department regulations. This statement should be "applicant has demonstrated an ability and intention to comply." (8) (20)

Response: The Department recognizes the awkwardness of this wording, which resulted from an inadvertent printing error, and has revised this statement based on a similar provision in Chapter 77, Noncoal Mining.

§210.15. License application.

§210.15

Comment: This section provides application requirements, but does not state how an applicant can obtain the application form. For clarity, this section should state where applications can be obtained. (20)

Response: The Department has reviewed this section to state that forms will be provided by the Department. The Department will provide written notice to licensed blasters and the regulated community that copies of all applications are available through Central Office and any of the District Mining Offices. Additionally, an electronic copy of the application is available on the Department's website.

§210.15(b)

Comment: Subsection (b) requires a notarized statement from the blaster who supervised the applicant, "or the applicant's employer." Given the broad range of employment situations, it is possible the applicant's employer may not have supervised the applicant. It is also possible the supervising blaster's employer could vouch for the applicant if the supervising blaster is no longer available. The Department should review this provision to ensure the notarized statement is from the person or organization with direct knowledge of the applicant's expertise. (20)

Response: In order to provide the information required in §210.15(b)(1) and (2), the applicant's employer and the supervising blaster would have to have direct knowledge of the applicant's expertise. For clarity, the language "a person who has direct knowledge of the applicant's expertise, such as" has been added to §210.15(b).

§210.15(b)(1)

Comment: Subsection (b)(1) establishes that a notarized statement is to describe "how the applicant assisted in preparation of the blasts and for how long." Since there are different categories of blasting licenses, this subsection should also require a description of the types of materials that the applicant worked with. (20)

Response: A description of a person's experience in blast preparations would inherently include a description of the materials that the applicant used.

§210.17. Issuance and renewal of licenses.

§210.17(a)

Comment: Demolition has always been an activity that was authorized by holding a general blaster's license. The proposed regulations should not require that a blaster be licensed specifically to conduct demolition blasting but be authorized to conduct demolition blasting if he holds a general blaster's license. (8)

Response: The Department disagrees. Demolition blasting is a specialty field that differs greatly from construction, mining or other categories of blasting. The demolition of structures requires analysis of the support members of the structure to determine where to place explosive charges. However, the Department recognizes that individuals have been conducting demolition blasting pursuant to existing regulations with general blasting licenses. A new subsection (g) has been added to the regulations to provide for reclassification to a demolition blaster's license without examination or application fee based on three years of experience in demolition blasting.

§210.17(c)

Comment: PCA supports the proposed change to a three-year licensing period.

Response: The Department appreciates PCA's support for a three-year term for a blaster's license.

§210.17(d)

Comment: The Department should clarify what is considered acceptable in terms of continuing education requirements. (8)

Response: The Department does not intend this requirement to be prescriptive. The Department has requested input from the International Society of Explosives Engineers and the Institute of Makers of Explosives in determining what is acceptable. The Department has compiled a list of acceptable training sessions and sources. This list is available on the DEP website and through request.

§210.18. Recognition of Out-of-State Blaster's License.

Comment: The Department should identify the states that are found to have equivalent programs and should notify blasting companies and other employers of blasters as states are added or deleted from this

list. This will help ensure that those who wish to employ blasters from out-of-state are able to determine whether the blaster is qualified to obtain a license without going through the full licensing procedure. (14)

Response: The Department agrees and has compiled a list of states with similar requirements to Pennsylvania's. The states' licenses that appear on the list will be considered acceptable. That list is available on DEP's website and will be continually updated.

CHAPTER 211

§211.101. Definitions.

Blast area and **Blast site**

Comment: "Blast site " is defined as "the **area** where the explosive charges are located." The use of the term "area" could cause confusion with the defined term "blast area". For clarity the definition of "blast site" should use another term such as "point(s)" instead of "area." (20)

Response: The Department agrees and has changed the language of the definition of "blast site" to "the specific location where the explosives charges are loaded into the blast holes."

Comment: The "blast area" definition should coincide with MSHA 30 CFR Subpart E. Explosives (56.6000) Definitions. (15) (18)

Response: The definition of "Blast area" in the proposed regulations is equivalent to the definition of "blast area" in 30 CFR Subpart E. Explosives (56.6000) Definitions.

Building

Comment: In this definition, what is meant by the term "regularly occupied"? This definition is used throughout Chapter 211. Whether a building is occupied only matters if the building is occupied when the explosives are detonated. Why is the frequency of occupation relevant? Why isn't an unoccupied building protected? What criteria would the blaster use to determine if a structure is "regularly occupied? (20)

Response: To avoid confusion, the definition of building has been changed to "a structure that is designed for human habitation, employment or assembly." For the most part, these buildings, with their finished interiors, are the most vulnerable to damage from ground vibration or airblast. The peak particle velocity and airblast standards in §211.151(c) and (d) were chosen to protect these structures.

Comment: The proposed regulations broadly define buildings and structures. The prevention of damage provisions of the proposed regulations is directed at structures, and all structures would require monitoring. This language causes confusion when determining where to monitor the blasting activities. (1) (6)

Response: This comment incorrectly characterizes the regulations. Subsection 211.171(a) requires monitoring at the nearest building. The Department recognizes there is some confusion as to the applicability of the scaled distance and peak particle velocity standards. These standards apply to buildings or other structures designated by the Department, and §211.151(c) has been revised accordingly. Monitoring is to be conducted at the nearest building, unless another structure is designated by the Department.

Flyrock

Comment: The definition of flyrock in the proposed regulations causes confusion because it states debris ejected from blast site. Almost all blasting operations cause flyrock according to the proposed regulations the way they are currently written. The proposed regulations should define flyrock as material ejected from the blast area instead of the blast site. (2) (5) (15)

Response: The Department agrees and has made the appropriate changes to the definition of flyrock. Flyrock is now defined as material ejected from the blast area.

Person

Comment: The definition of "person" as it applies to fines and liability may imply liability that exceeds the boundaries of the law. The definition should be clarified to conform to the law. (14)

Response: The purpose of the second sentence was to establish personal liability of members of associations and corporate directors, officers and agents for enforcement actions and penalties. However, Chapter 211 does not include provisions for fines and penalties or imprisonment. Consequently, this sentence has been deleted.

Structure

Comment: The definition of structure should be revised to exclude utility lines. Utility lines are defined separately and separate procedures are proposed for their protection. (14)

Response: The Department disagrees. The applicability of Subchapter H is clear and unambiguous in its application to utility lines that are in contact with the ground or buried in the ground. The term "structure" includes everything that is built or constructed to ensure that in appropriate circumstances the Department can require monitoring pursuant to §211.171 or, if necessary, a specific scaled distance or peak particle velocity pursuant to §211.151.

§211.102. Scope.

Comment: The preamble language of the proposed regulations regarding provisions of Chapter 211 and the Scope section in §211.102 state that there are provisions of the proposed regulations more stringent than mining regulations. These statements will lead to confusion and may result in inconsistent application of explosive regulation. This language should be revised to specifically identify the regulatory provisions that are more stringent than those of the mining regulations. (14)

Response: The Department disagrees. Chapter 211 deals exclusively with blasting. Since Chapter 211 contains a great number of detailed provisions not found in the mining regulations, any attempt to list specific differences would be an unnecessary and frivolous exercise.

Comment: The proposed regulations have provisions that are more stringent than the current mining regulations. Application of provisions more stringent than mining regulations should be deferred until the mining regulations are amended to be consistent with the requirements of the proposed regulations. (14)

Response: The primary purpose of these regulations is to provide uniform standards for all blasting in Pennsylvania. The Department feels that deferring the application of some provisions of the proposed regulations until the mining regulations are amended delays attaining that goal.

Subchapter B. Storage and Classification of Explosives.

Comment: The proposed regulations for explosives storage are inadequate. The inadequacies include construction of magazines, magazine site location, and security of magazine sites from theft. (16)

Response: The Department disagrees. The Department feels that adoption of the Federal Bureau of Alcohol, Tobacco and Firearms regulations for storage of explosives adequately address magazine siting and construction. The proposed regulations deal primarily with issues of safety from detonation of the explosives while stored in the magazines.

§211.121. General requirements.

§211.121(d)

Comment: A permit will not be issued unless the application is complete and demonstrates that the proposed activities comply with the applicable regulations. When will the applicant receive notice from the Department that the application is complete? Can the applicant amend the application to provide the necessary information or materials to complete the application? If so, the regulation should indicate that the Department will notify applicants of an incomplete application and identify the missing items necessary to complete the application. (20)

Response: The final regulation includes a statement in §211.121(d) that the Department will notify the applicant when the application is incomplete and will identify the items necessary to make it complete. In general, these permits contain a relatively small amount of information and the anticipated review time is short.

§211.124. Blasting activity permits.

Comment: Department-required activity permits are an unnecessary duplication of the permits required by PennDot and municipalities and would cause needless delay in construction projects. The customer of the blasting activities would unnecessarily endure higher costs as rock would have to be broken using hydraulic hammers or blasts designed with numerous delay intervals, increasing complexity and costs to fit under the criteria for permit-by-rule activity permits. (9)

Response: The Department recognizes that additional approvals may be required by PennDOT and some municipalities. However, the state blasting laws identify the Department as the agency responsible for regulating blasting. This responsibility cannot be delegated to other entities. The Department anticipates the blasting activity permit review period to be approximately two weeks. The Department does not believe that two weeks will cause needless delay for construction projects that require advanced planning.

Comment: Oil and Gas operators should be exempt from obtaining Blasting Activity Permits. Oil and gas wells are inspected by DEP Oil and Gas Inspectors, and the blasting generates very little ground vibration. Permit-by-rule activity permits should apply to oil and gas operations, and scaled distance calculations shouldn't apply to oil and gas operations. (12)

Response: Most oil and gas blasting operations will use the permit-by-rule. The Blasting and Explosives Inspectors of the Bureau of District Mining Operations inspect all commercial blasting operations, including oil and gas operations, because there are no explosives use provisions in the oil and gas regulations. Scaled distance will be used to gauge whether oil and gas operations require blasting activity permits or permits-by-rule. In the case of oil and gas operations, scaled distance will be determined vertically and horizontally. However, if the scaled distance is below 90, a blasting activity permit will be required as the same risk is posed to structures at a scaled distance of 90 regardless of the reason for the blasting activity.

§211.124(a)(11)

Comment: The proposed regulations establish liability insurance in the amount of $300,000 or more per occurrence. The limit should be increased to $1,000,000 per occurrence as this is an industry standard. (18)

Response: The Department recognizes that the industry standard is $1,000,000; however, the Department believes that setting a minimum of $300,000 is appropriate for small projects. The $300,000 limit was taken from the noncoal mining regulations at 25 Pa. Code 77.231(e).

Comment: Is there a mechanism that provides that insurance will be made available to all at a reasonable cost? (12)

Response: There is no mechanism in the regulations for insurance to be made available to all at a reasonable cost.

§211.124(a)(17)

Comment: Paragraph (a)(17) requires a permit application to include proof that residents within 200 feet of the blast site were informed of the proposed blasting operation. This notification could be "personal notification, written material left at each residence or first class mail." We have two questions. What constitutes proof of notification? In situations involving rental units or business properties, should the blaster notify the current tenants or property owner? (20)

Response: Proof of notification should include but not be limited to a list of people notified, a copy of the notification (if written), the name of the person who conducted the notification, and the time and date of each notification. In situations involving rental properties, the blaster would notify the current tenants.

§211.133. Blast report.

§211.133(a)

Comment: Blasting reports should be conveniently available to the public and Blasting Activity Plans should be made available to persons within 200 feet of the blasting operations. Also, information on how to report blasting damage and make claims should be made available and a time limit for the blasting permittee's response to such claims. (10)

Response: Blasting reports and Blasting Activity Plans are available to the public through the Department. Information on how to contact the Department to express concerns about blasting is on the DEP website.

Comment: Subsection (a) requires the blaster-in-charge to prepare a report of "each blast report." Should this read "each blast" rather than "each blast report"? (20)

Response: Yes. The Department has changed the language to "each blast."

Comment: Department should develop a standardized blast report form. (3)

Response: The Department agrees that a standardized blast report form should be required and has developed a form. It is available on the DEP website and directly from the Department.

Comment: Subsection (a) includes this sentence: "The Department may develop and require a blast report form to be used." How and when will licensees and permittees be notified that the Department has opted to require a report form? How and where will people obtain copies of the form? (20)

Response: The Pennsylvania chapters of the Society of Explosives Engineers have been notified of the requirement to employ a standardized blast report and have been provided with sample copies of the report. Additionally, all licensed blasters will be notified and provided a sample form by direct mailing. The form is available through the Department website. Hard copies are available from the Department directly.

§211.133(a)(1)

Comment: The word "specific" should be inserted in §211.133(a)(1). It should say "The specific locations of the blast and monitoring readings." (15) (18) (19)

Response: The Department feels that the language in the proposed regulations is adequate. The locations of the blast and monitoring readings are specific, and adding "specific" to the language is redundant.

§211.133(a)(3)

Comment: Requiring the permit number to be listed on the blast report needs to specify what permit needs to be listed on the report. (15) (18)

Response: The Department agrees and has changed the language of the proposed regulations to state "blasting activity permit or appropriate mining permit number."

§211.133(a)(7)

Comment: Do the burden, spacing, and pattern dimensions need to be on the sketch required on the blast report or listed on the report? (15) (18)

Response: The burden, spacing, and pattern dimensions need to be shown on the sketch and listed on the report. The sketch must show a schematic of the blast design and the point of initiation.

§211.133(a)(9)

Comment: The requirement that height or length of stemming and deck separation be listed on the shot report needs to be more specific. The requirement that the types of explosives used and their arrangements in the blast hole be listed in the blast report needs to be more specific. Are these requirements for each hole, collectively, or average? (15) (18)

Response: The height or length of stemming and deck separation must be provided for each hole on the shot report. The appropriate change has been made to the proposed regulations to clarify this point.

§211.133(a)(19)

Comment: The wording of the requirement that the measures to control flyrock be listed on the shot report needs to be specific. (15) (18)

Response: The Department gives the blaster discretion on how to describe the measures that are taken to prevent flyrock. The Department feels the language in the proposed regulations is adequate.

§211.133(a)(23)

Comment: It is not always reasonable to require the seismograph monitoring to be part of the blast record within 7 days. Seismograph monitoring reports should be required to be part of the blast record

within 30 days under normal circumstances and 7 days if specifically requested by the Department. (1) The 7 day requirement should be extended to 14 days. (14) (20)

Response: The Department agrees that requiring seismograph monitoring reports to be part of the blast record within 7 days is not always necessary. The timeliness of information is critical in order for the entity conducting the blasting or the Department to determine if adjustments to blasting designs are necessary to avert problems. The Department feels that requiring seismograph monitoring reports to be part of the blast record within 14 days would be acceptable under normal circumstances and within 7 days if specifically requested and has changed 211.133(a)(23) accordingly. In appropriate circumstances the Department is willing to grant waivers to allow the seismograph report to be made a part of the blast record within 30 days provided that when deemed necessary by the Department the seismograph report must be available in 7 days. Appropriate circumstances include operations in which all blasts are monitored, regardless of scaled distance and summaries of the seismograph monitoring reports, as specified by §211.133(b), are made available to the Department.

§211.133(a)(24)

Comment: If a misfires occur, actions are required to make the site safe. The language should be changed to say "if a known misfire occurs." (15)(18)

Response: The Department disagrees with the suggested change. Misfires are not always readily apparent because the blasted material may be heaped over the area where the misfire occurred. Misfires are sometimes discovered during excavation, well after the blaster has left the site. Misfires constitute a hazard whenever they are discovered and the site should be made safe. In the event that a misfire is discovered after the blaster-in-charge has left the site, the blaster-in-charge must be contacted to assure safety at the site and must prepare an addendum to the blast report. The addendum to the blast report would explain what actions were taken to make a site safe after a misfire was discovered during excavation.

Comment: Subsection (a)(24) states the report will include "the actions to make the site safe" after a misfire occurred. For clarity §211.133(a)(24) should reference the appropriate actions to take when there is a misfire listed in §211.157(e). (20)

Response: The Department agrees. Paragraph (24) has been revised to refer to §211.157.

§211.133(b)

Comment: Subsection (b) states the Department may require monthly summaries. The Department should explain the necessity for monthly summaries, the circumstances when monthly summaries would be required and how the blaster will be notified. (15) (18) (20)

Response: The Department may require monthly summaries if blasting is being conducted in an area where there is considerable public concern or potential for property damage. This information would be

in addition to the blast reporting requirements. The blaster will be notified in writing by the Department Blasting and Explosives Inspector.

§211.141. General requirements.

§211.141(4)

Comment: The proposed regulations should not prohibit smoking within 100 feet of a vehicle transporting explosives. The limit should remain 50 feet. Posting of "No Smoking" signs when the vehicle is parked at a blast site isn't necessary. (15) (18)

Response: The Department disagrees. Smoking near explosives constitutes a hazard. Maintaining a distance of 100 feet is not unreasonably burdensome. The current regulations do not specify the distance one may smoke from vehicles carrying explosives. The current regulations at §211.52(b)(6) merely require the posting of "No Smoking" signs.

§211.141(5)

Comment: The proposed regulations require the permittee to load no more than 2,000 pounds of explosives into a open body vehicle. This should be changed to load 2,000 pounds or less explosives into a open body vehicle. (18)

Response: The Department disagrees. The suggested language change offers no benefit. The current language clearly indicates that 2,000 pounds is a maximum limit.

§211.141(6)

Comment: The proposed regulations require the permittee to only load explosives into a closed body vehicle if the load is two thousand pounds or more. The language should be changed to "Any load of explosives that exceeds two thousand pounds of explosives must be transported in a closed body vehicle." (8) (15) (18)

Response: The Department disagrees. The suggested wording is not grammatically correct in this context. The Department has revised the wording to eliminate a conflict with §211.141(5).

§§211.141(11)(i) and (ii)

Comment: The proposed regulations establish requirements for fire extinguishers based on vehicle weight. The Department should adopt current DOT regulations. (15) (18) (20)

Response: The Department agrees and has incorporated the language of the PA Department of Transportation's existing regulations.

§211.141(12)

Comment: Subsection (12) requires explosives to be loaded into a vehicle that the "explosives containers are not exposed to sparks or hot gases from the exhaust tailpipe." This subsection further recommends the use of exhaust systems that discharge upwards to avoid possible exposures of the explosives to sparks or hot gases. If the explosive containers are loaded onto the bed of a truck, how will an upward exhaust discharge protect the containers from exposure to sparks? (20)

Response: Hot gases and sparks typically rise, so an upwardly discharging exhaust system would cause the hot gases and sparks to be discharged away from the vehicles' cargo. Additionally, all explosives stored in open bodied trucks must be covered by a fire proof tarp. Lower exhaust pipes would potentially constitute a greater hazard by generating hot spots in the bed of the truck and causing the rising hot gases and sparks to potentially come in contact with the explosives containers in the truck.

§211.151. Prevention of Damage.

Comment: The bituminous coal regulations, Chapter 87, were revised in 1998 after a full and thorough review. The Chapter 87 regulations conform to federal mining regulations. The Department presented to the MRAB Regulation, Legislation, and Technical Committee in August 1999 that there had been only one order issued for blasting damage in the previous three years. Why do regulations that appear to be effective in preventing damage from the use of explosives in connection with surface mining need to be superseded by more stringent regulations? (14)

Response: The issuance of one order for blasting damage does not accurately reflect the effect blasting has on homes. The best science available, U. S. Bureau of Mines Report of Investigations RI 8507, "Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting," concludes that damages can occur to homes at ground vibration levels lower than the present mining regulations. The adoption of more stringent ground vibration limits provides better protection of all structures. The Pennsylvania mining regulations, Chapters 77, 87 and 88, specify that the Department may reduce the maximum peak particle velocity allowed if it determines that a lower standard is necessary. There have been situations when the limits in the proposed regulations have been applied to mining activities in order to more adequately protect structures. Such pre-emptive measures may have prevented damages to homes.

§211.151(b)

Comment: The proposed regulations do not adequately protected the public from fly rock or debris ejected from the blast area. Mats should be employed on all blasts within 1,000 feet of houses. Enforcement actions taken when flyrock occurs, including $10,000 fines, are inadequate. The Department should close mining operations for a minimum of thirty days and revoke blaster's licenses for a minimum of thirty days. (10)

Response: The Department believes that the proposed regulations provide adequate protection from flyrock. Large scale blasting operations do not lend themselves to safe use of mats. However, the risk of flyrock is minimized by proper blast design. The proposed regulations do not address fines and penalties. Fines and penalties are established by the applicable statutes. When flyrock events occur, the Department will cease all further blasting until the cause of the flyrock is determined and corrected. The Department will suspend a blaster's license in cases where there is negligence or public endangerment.

Comment: Subsection (b) states that blasting may not cause flyrock. It also states that if flyrock occurs, the blaster-in-charge shall notify the Department within 4 hours of learning of the flyrock. Commentators believe flyrock is so common that blasters will be required to notify the Department after every blast. Is this the Department's intent? If the goal is to prevent flyrock from being ejected from the blast area, the regulation should be amended to clarify this objective. (20)

Response: The definition of flyrock has been changed to material leaving the "blast area" in order to clarify the Department's intent.

§211.151(c)

Comment: Scaled distance should be at minimum of 90 for all blasts, with no loopholes. (10)

Response: The Department disagrees. The regulations state that blasts "shall be designed and conducted in a manner that either achieves a scaled distance of 90 or meets the maximum allowable peak particle velocity." §211.171(a) requires blasts below a scaled distance of 90 to be monitored for ground vibration and airblast. The U. S. Bureau of Mines Study, R. I. 8507, "Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting," conservatively predicts the highest probable ground vibration from a blast designed at a scaled distance of 90 is .5 inches per second peak particle velocity. Most blasts designed at a scaled distance of 90 result in a peak particle velocity significantly lower than .5 inches per second peak particle velocity.

Comment: The proposed regulations should state that all blasting shall be designed and conducted in a manner that meets the allowable peak particle velocity. Using this criteria would eliminate the concern over determining scaled distance. (18)

Response: Scaled distance is a reliable tool for predicting ground vibration prior to blasting to determine if a blast design will result in safe ground vibration levels. There should be no concern over the use of scaled distance because all licensed blasters have been tested on their ability to calculate scaled distance.

Comment: The proposed regulations provide an unnecessary increase of 61% over the current standard (scaled distance of 55) by requiring blasts be designed at a scaled distance of 90. Changing the required minimum scaled distance requirement for monitoring of 50 for construction and 60 for mining to 90 puts unnecessary burden on the blasting industry. The former U. S. Bureau of Mines Safe Blasting Criteria (Z-Curve) should not be the regulatory limit as current standards are adequate. (7) (8)

Response: The Department feels that the current regulations do not adequately protect all structures. The best available science, the former U. S. Bureau of Mines Study, R. I. 8507**,** "Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting," concluded that damage could possibly occur to some structures at peak particle velocities as low as .5 inches per second. The U. S. Bureau of Mines Study, R. I. 8507, predicts the highest probable ground vibration from a blast designed at a scaled distance of 90 is .5 inches per second peak particle velocity. The practical application of this requirement is to prevent property damage.

Comment: The proposed regulations do not address damage from fatigue to single family, wood frame, concrete block foundation homes from the effects of repeated blasting. The U. S. Bureau of Mines testing (U. S. Bureau of Mines Report of Investigations RI 8507, "Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting") was limited in scope with respect to the structures tested for fatigue damage and the geology of the areas where the tests were performed is profoundly different than the area around a limestone quarry. To adequately protect homes from damage due to fatigue the peak particle velocity should be .10 inches per second in the 10-18 hertz frequency range. (10)

Response: Additional work has been completed since the publication of U. S. Bureau of Mines Report of Investigations RI 8507, "Structure Response and Damage Produced by Ground Vibration From Surface Mine Blasting." This information can be found in "Ground Vibration Effects on Structures," DESA, D. E. Siskind and Associates, LLC. According to this research, the load exerted on building materials must be a significant fraction of the ultimate strength of the material, typically 50%, to cause damage due to fatigue. The Siskind study found that if blasting-generated ground vibration levels are below the limit in the proposed regulations, then ground vibration is lower than the levels that would cause fatigue damage. The maximum response of a dwelling to ground vibration occurs when the frequency of the ground vibration, measured at the dwelling, matches the frequency of the home. Since ground vibration is measured at the dwelling or structure, the geologic medium through which the vibration traveled is not a factor. Although RI 8507 did not include a fatigue study on the seventy-six homes monitored during the study, RI 8507 did determine the maximum response and natural frequencies for single family, wood frame, concrete block foundation homes.

Comment: There is no method of predicting ground vibration frequency. How can a blaster insure that he doesn't exceed the ground vibration limit in the proposed regulations, the U. S. Bureau of Mines Safe Blasting Criteria (Z-Curve)? (7)

Response: Designing a blast for a scaled distance of 90 or above will adequately ensure that the "Z-curve" is not exceeded. Alternately, the effects of local geology on frequency and amplitude of ground vibration can be determined by monitoring small test blasts at different distances and directions from the blast site. The information from these tests can be used to design blasts to meet the standards in Figure 1.

Comment: Subsection (c) requires a blast to achieve either a scaled distance of 90 or the maximum peak particle velocity as indicated in Figure 1. One commentator believes these standards may be too restrictive when applied to unconsolidated materials in the vicinity of a blast. Should geologic variations be considered in the determination of vibration limits? (20)

Response: Geology does affect the frequency and magnitude of ground vibrations as they travel from a blast site to a building. The scaled distance limit of 90 was derived from a large number of blasts under a variety of geologic conditions. While 90 may be conservative in some areas, the blaster may elect to use Figure 1 as the standard. Since geology does not influence a building's response to ground vibration, and since ground vibration is measured at the building, geology is irrelevant when applying Figure 1.

§211.151(d)

Comment: Airblast pressure limits proposed are like proposing a highway speed limit of 200 miles per hour-they do nothing to protect the public. Even if not physiologically injurious they can be very upsetting. (10)

Response: According to U. S. Bureau of Mines Report of Investigations RI 8485, "Structure Response and Damage Produced by Airblast from Surface Mining", there is minimal probability of the most superficial type of damage occurring in residential structures at the limits set in the regulations. U. S. Bureau of Mines Report of Investigations RI 8485 recommends the airblast limits set in the regulations and states that the limits should provide 95 to 99 percent non-damage probability and 90 to 95 percent annoyance acceptability. According to the International Society of Explosive Engineers Blaster's Handbook, 17th Edition, depending on which method is used to convert decibels to pressure, an maximum allowable airblast under the regulations is equivalent to the effects of a 20-28 miles per hour wind gust.

§211.152. Control of Noxious Gases.

Comment: The proposed regulations do not deal with air pollution control. (10)

Response: The DEP Bureau of Air Quality has concluded that the gases generated by blasting operations and released to the atmosphere are not of a significant quantity to threaten the environment. This regulation addresses the gases generated by blasting that can pose a threat to the safety of persons in the vicinity of the blast if not properly vented.

§211.153. General requirements for handling explosives.

§211.153(b)

Comment: In §211.153 (b) the language should be changed to "The use of matches and lighters, and smoking is prohibited." (15) (18)

Response: The Department disagrees with the suggested language. If someone possesses matches or lighters when working with explosives, it is far more likely they will unconsciously use them.

§211.154. Preparing the blast.

§211.154(b)

Comment: Subsection (b) allows the Department to establish a different distance limitation. The Department should explain the necessity for this provision. The regulation should provide information regarding the circumstances for which the Department would establish a different distance limitation and how the blaster will be notified. (20)

Response: Site conditions may dictate that it is safer to require a greater distance or to allow a lesser distance between operating machinery and loading activities. This is determined by an inspection of the site by the Department Blasting and Explosives Inspector.

§211.154(c)

Comment: In §211.154(c) the language should be changed to clarify what "present" means. (15) (18)

Response: The Department feels that the language in §211.154(c) is clear. Its intent is to ensure that another person is there and is able and ready to render assistance in the event of accident or injury.

Comment: Subsection (c) states that a "person may not prepare or detonate a blast unless another person is present…." However, §211.156(b) states that "only the blaster in charge may detonate a blast." Further, subsection (e) states that "only the blaster-in-charge, other blasters, and up to six assistants per blaster may be at a blast site…." To make these subsections consistent, the first reference to the term "person" in Subsection (c) should be changed to "blaster-in-charge." The second reference to person in Subsection (c) should be changed to "blaster or assistant" to be consistent with Subsection (e). (20)

Response: The Department agrees that for clarity and consistency, the first reference to "person" in subsection (c) should be changed to "blaster-in-charge." The second reference to "person" should not be changed. On small blasting operations, the blaster-in-charge may not need other blasters or assistants. However, another person must be present and able to render assistance in the even of an emergency.

§211.154(f)(2) and (4)

Comment: The proposed regulations should allow for the use of sectional poles connected by brass fittings that have non-sparking plastic and rubber ends that are intended for that use. For consistency the language "wooden tamping pole" should be changed to "non-metallic, non-sparking tamping pole." (15) (18) The references to the "wooden end" of the pole in subsection (f)(2) and (f)(4) should be changed to "non-sparking material end." (20)

Response: The Department agrees with these suggestions. The language has been changed in paragraphs (2) and (4) to allow a tamping pole constructed of non-ferrous, non-sparking, material and to allow the use of the non-ferrous, non-sparking, material end of the pole.

§211.154(f)(5)

Comment: The proposed regulations require the blast hole to be logged. It is not clear whether each hole is to be logged, how frequently, and to what degree. (15)(18)

Response: The language has been changed to say that each hole is to be logged throughout the loading process. The Department believes that specifying how frequently and to what degree of accuracy logging must be conducted is adequately characterized by revising the regulations to state "each blast hole shall be logged throughout the loading process."

§211.154(f)(7)

Comment: Section (f)(7) states the Department may specify the type and amount of stemming. The Department should explain the necessity for this provision. The regulation should provide information regarding the circumstances for which the Department would establish a different limitation for stemming and how the blaster will be notified. (15) (18) (20)

Response: The Department has encountered incidents in which flyrock and excessive air overpressure occurred as a result of inadequate quality or amounts of stemming. The blaster will be notified by the Department Blasting and Explosives Inspector.

§211.154(k)

Comment: The proposed regulations state that explosives may not be brought to a blast site in greater quantities than needed for the blast. Site and weather conditions can affect the amount of explosives that would be used. Should "blast site" be replaced by "blast hole"? (18)

Response: For loading activities "blast site" is a more appropriate term than "blast hole." However, "blast area" is the appropriate term for storing surplus explosives. The wording of §211.154(k) has been revised to clarify this point. The Department is concerned that an excessive volume of explosives, far greater than necessary for the blasting operation, could be delivered to the site and left remaining on the truck. To allow for changes in site and weather conditions, the Department has further changed the language of §211.154(k) to state that explosives may not be brought to the blast site in greater quantities than are expected to be needed for that blast.

§211.154(n)

Comment: The proposed regulations should state "Precautionary measures include but not be limited to stopping or slowing of traffic and posting signs. (15) (18)

Response: The Department disagrees. The proposed regulations provide an illustrative list of the appropriate, precautionary measures. According to the Statutory Construction Act "including" means

"including but not limited to." Therefore, the proposed language does not prohibit alternative or additional precautions.

§211.156. Detonating the blast.

§211.156(b)

Comment: The proposed regulations state that only the licensed blaster-in-charge may detonate a blast. The proposed regulations should state that only the blaster-in-charge or a designated licensed blaster may detonate a blast. (18)

Response: The Department disagrees. The blaster–in-charge is ultimately responsible for the blast and should be more aware than anyone else of the safe time to detonate the blast. All other activities associated with the blast are less critical and can be delegated.

§211.159. Electronic detonation.

Comment: Provisions for programmable electronic detonators should be added to the proposed regulations. (15)

Response: Programmable electronic detonators are not excluded by the proposed regulations. They are a type of electronic detonation system.

§211.162. Safety fuse.

Comment: The technology of safety fuse is very antiquated. The quality of safety fuse is suspect and its use doesn't allow for stopping a blast due to an unforeseen emergency once the fuse is lit. Safety fuse shouldn't be permitted for use in surface blasting. (11)

Response: Safety fuse is used commonly in slate production, where small amounts of black powder are employed as the explosive charge. The small charges are used so the slate will not be damaged. In this application safety fuse is adequate. Safety fuse is rarely used for large, multiple hole blasting operations.

§211.171. General Provisions for Monitoring.

§211.171(a)

Comment: The proposed rulemaking should be revised to specify the circumstances under which the Department may require ground vibration and air blast monitoring at scaled distances above 90 and at structures other than the structure closest to the blasting. There should be a reasonable basis for requiring monitoring, and the basis should be articulated. (14)

Response: Specifying when the Department may require additional monitoring could limit its ability to deal with unusual, unanticipated situations. Additional monitoring will be required when in the Department's opinion such monitoring is necessary to ensure that the requirements of these regulations are being satisfied regarding the protection of unusual structures from damage.

§211.171(d)

Comment: For purposes of clarification the minimum trigger level for seismograph measurement of ground vibration should be set at half the most conservative limit. The conservative limit is .5 inches peak particle velocity. The minimum required ground vibration recording level should be specified as .25 inches per second peak particle velocity. (1) (4) (17) (19) (20)

Response: The Department agrees that the required lowest peak particle velocity trigger level be .25 inches per second. The Department has made the appropriate change to §211.171(d).

§211.171(e)

Comment: Older model and brick seismographs do not provide a date and time for when the instrument was turned on and off. A 3-year phase in period should be included here as was done in §211.133(a)(22). Language can be added which would allow a blaster to supply the on/off times for the instrument on a signed statement. (19) (20)

Response: The Department agrees. The revised regulation will allow the blaster to supply on/off times on a signed statement when he is using an instrument that doesn't provide a print out. There is no need for a phase-in period.

§211.172. Monitoring instruments.

Comment: The Department should change the numbering system in §211.172 to be consistent with the rest of the regulations. (19)

Response: The numbering system in §211.172 is consistent with the numbering system required by the Pennsylvania Code and *Pennsylvania Bulletin*.

Section 211.173. Monitoring records.

§211.173(a)

Comment: Persons conducting seismograph monitoring may not be qualified to conduct seismograph monitoring. (1)

Response: The Department shares that concern. The proposed regulations require that persons conducting seismograph monitoring be adequately trained by competent individuals.

§§211.173(b)(1) and (4)

Comment: Subsection (b)(1) requires monitoring records to include the calibration pulse. Subsection (b)(4) requires the results of a field calibration test for each channel. Are these requirements redundant? (19)

Response: Checking the field calibration on an instrument prior to its use ensures that it is properly calibrated prior to recording the blast. Most instruments perform this function automatically while some instruments require manual input. The presence of the calibration pulse on the monitoring record demonstrates that the instrument was properly calibrated while recording the blast.

§211.173(b)(2)

Comment: Subsection (b)(2) requires the calibration of the gain setting, for instruments with variable gain settings. This section needs clarification. (19)

Response: The Department agrees that clarification is necessary and has made the appropriate changes to paragraph (1) in the regulations.

§211.173(c)

Comment: The Department may require a ground vibration or airblast recording to be analyzed or certified by an independent qualified consultant who is not related to the blasting activity permittee or its customer. Under what circumstances would the Department require this type of analysis or certification? The regulation should provide information regarding the circumstances when it may require this type of analysis and how the blaster will be notified. (20)

Response: The Department agrees that information regarding the circumstances when the Department requires independent analysis of ground vibration or airblast records should be included in the regulations. For clarity the Department has added "If the Department questions the validity of a ground vibration or airblast record or the interpretation of the record" to §211.173(c).

Comment: Independent party analysis of seismograph monitoring reports should continue to be a requirement in Pennsylvania. Independent analysis of seismograph monitoring reports is not always necessary but oftentimes nuances appear on the seismograph monitoring reports that require explanations. (1)

Response: The regulations retain the provision to allow the Department to request independent analysis.

Comment: Subsection (c) should be revised to clarify the situations which will allow the Department to require third party analysis and/or certification. The Department has consistently maintained, throughout the development of this regulation, that third party certification would be unnecessary with the modern instruments now available. PCA agrees with that position. DEP should therefore limit this requirement for third party verification to circumstances that indicate a specified deficiency in the monitoring record. (14)

Response: For clarification the Department has added the language "If the Department questions the validity of a ground vibration and airblast record or the interpretation of the record" to §211.173(c). Identifying specific deficiencies in the regulations would take away the latitude from the Department to address situations where independent party analysis would be beneficial but not for the specific deficiencies listed.

§211.181. Scope.

Comment: A clarification is necessary in the proposed regulations for blasting in the vicinity of utility lines. Electric transmission lines should not be included as utility lines with regard to these provisions. (7)

Response: Overhead, electric transmission lines are not included in the provisions. This section clearly states that it deals only with buried utility lines, underground utility lines, and utility lines making contact with the ground. Electric power lines do not make contact with the ground, but are supported by poles to prevent them from making contact with the ground.

§211.182. General provisions.

§§211.182(c) and (d)

Comment: Procedures that were developed to ensure that blasting near utility lines doesn't damage the lines have been effective. These procedures allowed measures other than methods specified in the regulations to be approved after consideration of the Department and approval of the utility owning the lines. The proposed regulations should allow acceptance of measures agreed to by the utility owning the line and consideration of the Department. (15) (14) (19) (20) The Department should also consider revising the language to allow blasting to accommodate "other measures, as approved by the Department and agreed to by the utility" to permit some flexibility for blasting in the vicinity of utility lines. (20)

Response: The Department agrees and has inserted language in subsection (e) to allow acceptance of measures agreed to by the utility that owns the line and approved by the Department.