

WHAT DID YOU SAY? Combatting Operational Mining Noise in Pennsylvania

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ABSTRACT

Despite the extensive statutory and regulatory control of Pennsylvania's mining industry, the Commonwealth has failed to adequately address the issue of excessive operational mining noise. Currently, a citizen's only recourse within Pennsylvania is to prove that a mining operation poses a public nuisance, an inherently subjective approach with an evidentiary burden citizens often fail to meet. Acknowledging that difficulty, Pennsylvania courts have signaled that the burden may be alleviated through the adoption and use of a decibel-based sound level standard.

The federal government has published several guidance documents identifying decibel-based sound pressure levels that adversely affect the public. Furthermore, some state agencies have promulgated regulatory schemes utilizing decibel-based thresholds to address other types of noise sources. By analyzing the current case law in Pennsylvania relating to excessive operational mining noise, the guidance published by the federal government, and the regulatory examples of other states, this Comment will recommend a new decibel-based approach to tackling the public's concern over excessive operational mining noise.

Table of Contents

I.	INTRODUCTION	256
II.	BACKGROUND.....	257
	A. The Abatement of Mining Noise: Citizen Challenges to the Permitting Process.....	257
	1. Consideration of Noise in the Permitting Process.....	257
	2. Challenges to Permit Conditions.....	258
	B. The Abatement of Mining Noise: Citizen Challenges to Public Nuisance Determinations	259

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1.	Early Attempts to Prove Public Nuisance	259
2.	Subsequent Attempts to Prove Public Nuisance	260
III.	ANALYSIS	260
A.	The Current Common-law Standard for the Abatement of Excessive Operational Mining Noise	260
1.	The Public Nuisance Test.....	261
2.	Early Application of the Public Nuisance Test	262
3.	Subsequent Application of the Public Nuisance Test.....	263
B.	Sources of Decibel-Based Standards.....	264
1.	Federal Noise Abatement Guidelines.....	265
2.	State Noise Abatement Guidelines.....	270
C.	A Recommended Standard For Pennsylvania	271
IV.	CONCLUSION	273

I. INTRODUCTION

Pennsylvania is one of the largest coal producers in the United States.¹ Inevitably, industrial mining operations are intertwined with the lives of some Pennsylvania citizens. However, Pennsylvania currently lacks a regulatory standard limiting the amount of operational mining noise that may be produced by a mining operator.² Consequently, when the noise produced by a nearby mining operation affects a citizen's quality of life, the citizen must rely on public nuisance law.³ Unfortunately, to prove that noise produced by a mining operation poses a public nuisance, a citizen must overcome the difficult task of offering sufficient evidence to describe how the surrounding community perceives the noise at issue.⁴ To further complicate matters, courts are frequently required to render decisions based upon competing experts.⁵

Pennsylvania can eliminate much of the burden on the citizen and the court system by adopting a regulatory-based standard that limits permissible sound levels.⁶ Pursuant to that objective, this Comment has three main goals: (1) provide background information on the issue of operational mining noise in Pennsylvania; (2) analyze the current state of the law; and (3) recommend a regulatory approach Pennsylvania can use

1. *Pennsylvania State Profile and Energy Estimates*, U.S. ENERGY INFORMATION ADMINISTRATION, <http://www.eia.gov/state/?sid=PA> (last updated July 21, 2016).

2. *Chimel v. Pa. Dep't of Env'tl. Prot.*, No. 2011-033-M, 2014 WL 6835113, at *25 (Pa. Env'tl. Hrg. Bd. Nov. 25, 2014).

3. *Id.* at *26.

4. *See Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674, at *26 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

5. *See id.* at *27.

6. *See Chimel*, 2014 WL 6835113, at *29.

to streamline the process by which citizens obtain relief from excessive noise.

II. BACKGROUND

Today, Pennsylvania is the fourth largest coal producer in the United States.⁷ Pennsylvania is also one of the top ten producers of noncoal minerals in the United States, an industry generating nearly \$1 billion of revenue each year.⁸ With the prevalence of both coal and noncoal mining operations in Pennsylvania, residents often complain about mining-related hazards such as noise, which often leads to disputes with the operators.⁹ This section will provide an overview of the two major phases of litigation involved in the abatement of operational mining noise in Pennsylvania.¹⁰

A. *The Abatement of Mining Noise: Citizen Challenges to the Permitting Process*

Throughout the last fifty years, Pennsylvania citizens challenged the mining permitting process¹¹ using two methods: (1) by offering proof that a permit failed to account for operational noise; and (2) by offering proof that a permit lacked adequate conditions needed to control noise.¹²

1. Consideration of Noise in the Permitting Process

In early challenges to excessive operational mining noise, citizens prevailed by proving that the Pennsylvania Department of Environmental Protection (“Department”) failed to consider the noise generated by a proposed mining activity during the permitting process.¹³

7. See *Pennsylvania State Profile and Energy Estimates*, *supra* note 1.

8. See *Noncoal Mines and Quarries In Pennsylvania*, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, <http://www.dep.pa.gov/Business/Land/Mining/Noncoal/Pages/default.aspx> (last visited July 25, 2016).

9. See *Mining Hazards and Problems*, PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION, <http://www.dep.pa.gov/Business/Land/Mining/Noncoal/Pages/Mining-Hazards-and-Problems.aspx> (last visited July 25, 2016).

10. The two major phases of litigation are citizen challenges to the permitting process and challenges to public nuisance designation.

11. Under Pennsylvania Law, an operator must submit a completed application to the Department to obtain a permit before commencing mining operations. See 25 PA. CODE §§ 86.11–86.18 (2015) (describing the stages of the permitting process).

12. See *Baughman v. Pa. Dep’t of Env’tl. Res.*, No. 77-180-B, 1979 WL 4559, at *14 (Pa. Env’tl. Hrg. Bd. Jan. 26, 1979); see also *Setliff v. Pa. Dep’t of Env’tl. Res.*, No. 83-289-G, 1986 WL 27264, at *4 (Pa. Env’tl. Hrg. Bd. Apr. 7, 1986).

13. See generally *Baughman*, 1979 WL 4559.

In *Baughman v. DER*,¹⁴ the Pennsylvania Environmental Hearing Board¹⁵ (“Board”) held that, pursuant to Article I, Section 27 of the Pennsylvania Constitution,¹⁶ during the permitting process, the Department must determine the likelihood that a potentially nuisance-generating mining operation would constitute a nuisance if granted a permit.¹⁷ In other words, the Department must consider potential noise levels from a proposed coal processing plant “to determine whether its operation [would] interfere with the reasonable enjoyment by others of their homes.”¹⁸ If the Department determines that the mining operation might constitute a nuisance, then the Department has the obligation to consider noise during permit review.¹⁹ Failure to do so will result in remand of the permit back to the Department.²⁰

In a subsequent decision, *Kwalwasser v. DER*,²¹ citizens claimed that the Department failed to consider noise when reviewing an operator’s permit application for a mining operation.²² Again, the Board held that the Department abused its discretion because the Department failed to consider the possibility that noise generated by a mining operation would constitute a public nuisance.²³

2. Challenges to Permit Conditions

Citizens employed a new tactic to challenge permits because of the *Baughman* and *Kwalwasser* adjudications.²⁴ In *Setliff v. DER*,²⁵ the Board held that, in addition to considering noise when issuing a permit,

14. *Baughman v. Pa. Dep’t of Env’tl. Res.*, No. 77-180-B, 1979 WL 4559, at *14 (Pa. Env’tl. Hrg. Bd. Jan. 26, 1979).

15. See 35 P.S. §§ 7511–16 (2015) (establishing the Environmental Hearing Board as an independent quasi-judicial agency, consisting of five judges with the power and duty to conduct hearings related to orders, permits, licenses, or decisions of the Pennsylvania Department of Environmental Protection).

16. PA. CONST. art. I, § 27.

17. *Baughman*, 1979 WL 4559, at *14.

18. *Id.* at *14.

19. See *id.*

20. See *id.* at *15.

21. *Kwalwasser v. Pa. Dep’t of Env’tl. Res.*, No. 84-108-G, 1986 WL 27235 (Pa. Env’tl. Hrg. Bd. Jan. 24, 1986).

22. *Id.* at *21.

23. *Id.* at *23.

24. Compare *Baughman*, 1979 WL 4559, at *13 (contending that the Department failed to consider operational mining noise prior to issuing a permit), with *Kwalwasser*, 1986 WL 27235, at *21 (contending that the Department failed to consider the amount of noise generated by mining operation), and *Setliff v. Pa. Dep’t of Env’tl. Res.*, No. 83-289-G, 1986 WL 27264, at *4 (Pa. Env’tl. Hrg. Bd. April 7, 1986) (contending that the Department failed to properly condition the permit to address operational mining noise).

25. *Setliff v. Pa. Dep’t of Env’tl. Res.*, No. 83-289-G, 1986 WL 27264 (Pa. Env’tl. Hrg. Bd. April 7, 1986).

the Department must attach conditions to a mining operation permit to ensure that noise levels from an operation will not create a public nuisance.²⁶ Citizens then attempted to challenge permits based on *Setliff*.²⁷ However, in a subsequent decision, the Board refused to follow this precedent because the Board's decision in *Setliff* was an outlier with no regulatory or statutory basis.²⁸

B. The Abatement of Mining Noise: Citizen Challenges to Public Nuisance Determinations

Responding to the outcomes of earlier litigation, the Department began to consider operational noise as a part of the permitting process.²⁹ Consequently, rather than challenging the contents of the permit, citizens sought to prove that the noise generated by mining operations posed a public nuisance.³⁰

1. Early Attempts to Prove Public Nuisance

*Snyder Township v. DER*³¹ is illustrative of an early attempt by a Pennsylvania citizen to prove that a mining operation constituted a public nuisance.³² In this case, the appellant testified that back-up warning devices installed on mining equipment were so loud during the summer months that they were “nerve-wracking.”³³ However, the Board found that such evidence was insufficient to prove that the mining operation constituted a public nuisance because the appellant's testimony lacked details and was unsupported by other witnesses.³⁴

After *Snyder Township*, citizens began to offer more objective evidence to establish a public nuisance.³⁵ In *Plumstead Township v. DER*,³⁶ the Board held that Plumstead failed to prove that the noise

26. *Id.* at *4.

27. *Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674, at *25 n.27 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

28. *Id.*

29. *See id.* at *33; *see also Snyder Twp. v. Pa. Dep't of Env'tl. Res.*, No. 85-022-G, 1988 WL 161062, at *6 (Pa. Env'tl. Hrg. Bd. Dec. 12, 1988).

30. *See Snyder Twp.*, 1988 WL 161062, at *6–7.

31. *Snyder Twp. v. Pa. Dep't of Env'tl. Res.*, No. 85-022-G, 1988 WL 161062 (Pa. Env'tl. Hrg. Bd. Dec. 12, 1988).

32. *See id.* at *1.

33. *Id.* at *6.

34. *See id.*

35. *See, e.g., Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674, at *9–12 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

36. *Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

generated by a quarry rose to the level of a public nuisance.³⁷ There, the appellants offered decibel-based noise level readings coupled with expert testimony to show that the quarry constituted a public nuisance.³⁸ However, the Board reasoned that, even with the decibel-based sound level readings, the Board had no way to determine that the noise would “unreasonably interfere with a right common to the general public.”³⁹ In other words, the Board was not provided with sufficient evidence to establish how the community would perceive the noise.⁴⁰ Moreover, the Board determined that the appellant’s expert testimony regarding noise levels was less credible than the Department’s expert testimony.⁴¹

2. Subsequent Attempts to Prove Public Nuisance

In *Chimel v. DEP*,⁴² the appellants offered evidence of decibel-based noise levels produced by a mining operation.⁴³ The Board, however, determined that without some benchmark set by the Department it had no basis to determine that those levels constituted a public nuisance.⁴⁴ Therefore, the Board held that the appellants failed to satisfy their burden to show that the operation constituted a public nuisance.⁴⁵ This decision signaled the Board’s reluctance to establish a decibel-based standard absent a benchmark set by statute or regulation.⁴⁶

III. ANALYSIS

A. *The Current Common-law Standard for the Abatement of Excessive Operational Mining Noise*

It is now well established that Pennsylvania courts use public nuisance law to resolve legal disputes concerning excessive operational

37. *Id.* at *26.

38. *Id.* at *9, *26.

39. *Id.* at *26.

40. *See id.*

41. *See id.* at *27.

42. *Chimel v. Pa. Dep’t of Env’tl. Prot.*, No. 2011-033-M, 2014 WL 6835113 (Pa. Env’tl. Hrg. Bd. Nov. 25, 2014).

43. *Id.* at *8–9.

44. *See id.* at *30 (“Without a regulatory context or expert testimony, the Board has no basis to evaluate numerical noise levels and claims that the noise at certain levels constitutes a public nuisance.”).

45. *See id.* at *32.

46. *See id.*

mining noise.⁴⁷ This section will outline the development and evolution of the public nuisance test.

1. The Public Nuisance Test

Currently, Pennsylvania has no applicable regulatory or statutory standards limiting the amount of operational mining noise produced by surface mining activities.⁴⁸ However, pursuant to Section 1917-A of the Administrative Code of 1929,⁴⁹ the Board previously held that “it would be an abuse of discretion for the Department not to consider the noise generated by a surface mine and to determine whether that noise will constitute a public nuisance.”⁵⁰ Furthermore, citing an earlier decision, the Board noted that the Department “has a clear duty to consider noise impacts”⁵¹ during review of a surface mining permit application to ensure that the operation does not create a public nuisance.

To help resolve disputes regarding operational mining noise, the Board developed two ways by which a citizen may show that the Department abused its discretion in granting a permit to a mining operation.⁵² To prove that the Department abused its discretion, an appellant must show that either: (1) the Department failed to evaluate noise when reviewing the permit application in question; or (2) the noise generated by the operation will constitute a public nuisance.⁵³

The first requirement ensures that the Department evaluates potential noise impacts from an operation prior to permit approval. However, the Department is not required to consider the noise impacts to the appellant’s desired standards.⁵⁴ In the past, the Department has satisfied this requirement by comparing noise levels among similar mining operations.⁵⁵

The second requirement places the burden on the citizen to show that the noise generated by a surface mining operation will constitute a

47. See *Plumstead Twp. v. Pa. Dep’t of Env’tl. Res.*, No. 91-214-M, 1995 WL 387674, at *25–26 (Pa. Env’tl. Hrg. Bd. June 14, 1995); see also *Chimel*, 2014 WL 6835113, at *26.

48. See *Chimel*, 2014 WL 6835113, at *25.

49. Administrative Code of 1929, Act of April 7, 1929, P.L. 177, amended by, 25 P.S. § 510–17.

50. *Chimel*, WL 6835113, at *25 (citing *Plumstead Twp.*, 1995 WL 387674, at *25).

51. *Chimel*, WL 6835113, at *25.

52. See *id.* at *26 (citing *Plumstead Twp.*, 1995 WL 387674, at *21, *25; *Snyder Twp. v. Pa. Dep’t of Env’tl. Res.*, No. 85-022-G, 1988 WL 161062, at *1, *6 (Pa. Env’tl. Hrg. Bd. Dec. 12, 1988)).

53. See *Chimel*, 2014 WL 6835113, at *26.

54. See *id.*

55. See *Plumstead Twp.*, 1995 WL 387674, at *25; see also *Chimel*, 2014 WL 6835113, at *26.

public nuisance.⁵⁶ The Board applies the Second Restatement of Torts, Section 821B, to determine whether an activity is a public nuisance.⁵⁷ The Restatement provides that “[a] public nuisance is an unreasonable interference with a right common to the general public.”⁵⁸

Additionally, in explaining whether noise could constitute public nuisance, the Pennsylvania Supreme Court stated that “[a]lthough not entitled to absolute quiet in enjoyment of property, every person has the right to require a degree of quietude which is consistent with the standard of comfort prevailing in the locality wherein he lives.”⁵⁹ In a later decision, the Commonwealth Court⁶⁰ stated that “[t]o constitute a nuisance based upon noise, the question is whether the noise is unreasonable and unnecessary considering all of the circumstance[s].”⁶¹ Although the Board adopted the Commonwealth Court’s standard, citizens have consistently failed to prove that permitted mining activity constitutes a public nuisance under this standard.⁶²

2. Early Application of the Public Nuisance Test

In *Snyder Township*, a citizen attempted to prove that a mining operation constituted a public nuisance by testifying that the operation was “objectionable” and “nerve-wracking.”⁶³ However, another witness testified that the noise did not bother her.⁶⁴ Ultimately, the Board held that the complainant’s testimony was inadequate because it was unsupported by expert testimony or additional citizens’ testimony.⁶⁵ This case highlights the pitfall of providing subjective evidence based merely on one citizen’s opinion.⁶⁶

56. See *Chimel*, 2014 WL 6835113, at *27 (citing 25 PA. CODE § 1021.101(c)(2)).

57. See *id.* at *28 (citing *Plumstead Twp.*, 1995 WL 387674, at *26).

58. *Chimel*, 2014 WL 6835113, at *28 (stating that the factors indicating that interference is unreasonable are: (1) whether the conduct significantly interferes with public health, safety, comfort, conscience, or peace; (2) whether a law or regulation approves such conduct; or (3) whether the conduct is of continuous or long-lasting effect).

59. *Id.* (citing *Twp. of Bedminster v. Vargo Dragway, Inc.*, 253 A.2d 759, 761 (Pa. 1969)).

60. See 42 Pa.C.S. § 763 (conferring appellate jurisdiction to the Commonwealth court for all appeals from the Environmental Hearing Board).

61. *Chimel*, 2014 WL 6835113, at *28 (citing *Gray v. Barnhart*, 601 A.2d 924, 927 n.4 (Pa. Comwlth. 1992)).

62. See *Gray*, 601 A.2d at 957; see also *Plumstead Twp.*, 1995 WL 387674, at *32.

63. *Snyder Twp. v. Pa. Dep’t of Env’tl. Res.*, No. 85-022-G, 1988 WL 161062, at *6 (Pa. Env’tl. Hrg. Bd. Dec. 12, 1988).

64. See *id.*

65. See *id.*

66. See *id.*

More recently, in *Plumstead Township*, citizens utilized a new method to describe noise that was more convincing than the unsupported opinion of a single citizen.⁶⁷ The citizens offered the testimony of a sound expert to show that a nearby quarry constituted a public nuisance.⁶⁸ The sound expert provided scientific evidence that the operational noise generated by the quarry would produce an ambient noise level exceeding 67 dBA⁶⁹ on the 145 acres surrounding the quarry, with a 15-dBA increase on an additional 100 acres.⁷⁰

Despite this novel tactic, the Board could not determine whether a sound level exceeding 67 dBA would “unreasonably interfere with a right common to the general public.”⁷¹ The Board stated that the citizens “must do more than offer the Board projected sound pressure levels.”⁷² Rather, the Board required evidence showing how the community would perceive the noise; however, a study indicating the threshold at which noise becomes annoying did not satisfy that burden.⁷³ Additionally, the Board determined that the Department’s expert, who stated that the quarry would not exceed sound pressure levels greater than 68 dBA, was more credible.⁷⁴ This was due to the citizen’s expert incorrectly calculating the noise levels and failing to testify how his computer program completed the calculations.⁷⁵ Therefore, *Plumstead* added a second evidentiary hurdle a citizen must overcome: they must establish the expert witness’s credibility.

3. Subsequent Application of the Public Nuisance Test

In *Chimel*, citizens offered sound level data in an unsuccessful attempt to establish that a mining operation created a public nuisance.⁷⁶ First, the citizens erroneously asserted that the “Board has acknowledged that an ambient noise level of 67 dBA or greater constitutes a public nuisance.”⁷⁷ The Board expressly rejected that it previously established

67. See *Plumstead Twp.*, 1995 WL 387674, at *26.

68. See *id.* at *27.

69. The term “dBA” refers to A-weighted sound decibels, a unit used to assess noise exposure. OSHA, *Appendix I:A-4, A-Weighted Network*, https://www.osha.gov/dts/osta/otm/noise/health_effects/soundpressure_aweighted.html (last visited July 26, 2016).

70. *Plumstead Twp.*, 1995 WL 387674, at *26.

71. *Id.*

72. *Id.*

73. *Id.* (citing *Muehlieb v. Philadelphia*, 574 A.2d 1208, 1212 (Pa. Comwlth. 1990)).

74. See *Plumstead Twp.*, 1995 WL 387674, at *27.

75. See *id.*

76. *Chimel v. Pa. Dep’t of Env’tl. Prot.*, No. 2011-033-M, 2014 WL 6835113, at *29–30 (Pa. Env’tl. Hrg. Bd. Nov. 25, 2014).

77. *Id.* at *29.

such a standard.⁷⁸ However, in the hearing, a Department witness testified that “the Department uses 68 decibels during the day and 65 decibels at night at the property line to evaluate whether the noise from a permitted operation constitutes a public nuisance.”⁷⁹ The employees also said that the Department adopted that standard as a result of the *Plumstead Township* decision.⁸⁰ In addition, the Department’s witnesses testified that noise at both levels was required to be sustained or continuous.⁸¹

In accordance with the Department’s expert testimony, one of the citizen-appellants testified that he took noise measurements ranging between 60 to 80 decibels.⁸² However, the Board found no credibility in the citizen’s testimony because he did not identify what instruments he used or when he took the measurements.⁸³ Furthermore, the citizen did not record his measurements or notify the Department of the noise.⁸⁴

The Board in *Chimel* held that the appellants failed to satisfy their burden to prove that the mining operation constituted a public nuisance.⁸⁵ Significantly, the Board stated that “[i]n the future, if the Department wants the Board to consider various noise levels that the Department uses, the Department needs to provide the Board with evidence to support the use of such noise levels and witnesses who are able to explain why the levels are appropriate.”⁸⁶ Additionally, when no regulatory standard exists, the Board has a preference for testimony by people subject to the alleged nuisance.⁸⁷ These assertions indicate that a regulatory standard could resolve operational mining noise disputes because the Board could simply compare sound level measurements taken from the complainant’s property to an established threshold.

B. Sources of Decibel-Based Standards

In the 1970’s, the federal government began to conduct research and publish guidelines concerning mining noise.⁸⁸ Unsurprisingly, several states began to address the same issue.⁸⁹ Both federal and state actions

78. *See id.*

79. *Id.*

80. *Id.*

81. *Id.* at *30.

82. *Id.*

83. *See id.*

84. *See id.*

85. *See id.* at *31.

86. *See Chimel*, 2014 WL 6835113, at *30.

87. *See id.* at *31.

88. *See* 42 U.S.C. §§ 4901–4918 (2012).

89. *See* 67 PA. CODE § 157.1 (2015); *see also* 7 N.J. ADMIN. CODE § 7:29-1.1 *et seq.* (2015).

relating to noise offer substantial guidance in efforts to establish a regulatory standard for operational mining noise in Pennsylvania.

1. Federal Noise Abatement Guidelines

After determining that noise presents a danger to the health and welfare of the nation's population, the U.S. Congress passed the Noise Control Act of 1972⁹⁰ ("Noise Control Act").⁹¹ The Noise Control Act establishes noise emission standards for products in commerce, provides general information to the public about noise control, and coordinates federal noise control research and activities.⁹² Pursuant to this Act, Congress authorized and directed federal agencies to administer any programs "within their control"⁹³ in such a manner as to achieve the Act's purposes.

Additionally, Congress directed the Environmental Protection Agency's ("EPA") administrator ("administrator") to coordinate the noise research conducted by all other federal agencies.⁹⁴ Moreover, the Act requires those federal agencies to consult with the administrator when prescribing standards or regulations relating to noise control.⁹⁵ Subsequently, the administrator must determine whether the submitted standards or regulations are sufficient to protect human health and welfare.⁹⁶ If the standards or regulations are not sufficient, the administrator will remand them to the agency for further review.⁹⁷

Furthermore, Congress directed the administrator to promulgate and publish criteria with respect to noise after the administrator consults with the other "appropriate"⁹⁸ federal agencies. The publication, consisting of a report, or series of reports, included the identification of major noise-emitting products, or classes of products, and the noise control techniques relating to those products.⁹⁹ Finally, Congress directed the administrator to publish proposed regulations for noise control.¹⁰⁰

Shortly after Congress enacted the Noise Control Act, the EPA published the report "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin

90. 42 U.S.C. §§ 4901–4918 (2012).

91. *Id.* § 4901.

92. *Id.*

93. *Id.* § 4903(a).

94. *Id.* § 4903(c)(1) (stating that the administrator must coordinate with all federal agencies).

95. *Id.* § 4903(c)(2).

96. *Id.*

97. *Id.*

98. *Id.* § 4904(a)(1).

99. *Id.* § 4904(b).

100. 42 U.S.C. § 4905(a).

of Safety” (“1974 report”).¹⁰¹ Although the 1974 report was not an EPA standard or regulation, the report represented the “analyses, extrapolations and evaluations of the present state of scientific knowledge”¹⁰² on noise. As required by the Act, the EPA established noise criteria by reviewing existing scientific studies.¹⁰³

As a threshold matter, the EPA used seven considerations to determine the best measurement for environmental noise:

1. The measure should be applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods of time.
2. The measure should correlate well with known effects of the noise environment on the individual and the public.
3. The measure should be simple, practical and accurate. In principle, it should be useful for planning as well as for enforcement or monitoring purposes.
4. The required measurement equipment, with standardized characteristics, should be commercially available.
5. The measure should be closely related to existing methods currently in use.
6. The single measure of noise at a given location should be predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.
7. The measure should lend itself to small, simple monitors which can be left unattended in public areas for long periods of time.¹⁰⁴

Ultimately, after also considering the physical characteristics of sound, the EPA concluded that sound level magnitude was the best measurement of environmental noise.¹⁰⁵

After selecting the magnitude of environmental sound as the relevant measurement, the EPA identified the environmental sound levels¹⁰⁶ “requisite to protect human health and welfare.”¹⁰⁷ Those levels were based upon two metrics: hearing loss and interference with human

101. U.S. ENVTL. PROT. AGENCY OFF. OF NOISE ABATEMENT AND CONTROL, 550/9-74-004, INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY (1974).

102. *Id.* at i.

103. *Id.*

104. *Id.* at 15–16.

105. *Id.* at 16.

106. *Id.* at 6 (“[T]he word ‘level’ refers to the magnitude of sound in its physical dimension, whether or not there are humans present to hear it.”).

107. *Id.* at 6.

activities.¹⁰⁸ First, the EPA determined that a 24-hour average sound level at or below 70 decibels would protect “virtually the entire population”¹⁰⁹ from hearing loss. Next, the EPA concluded that sound levels exceeding 45 decibels would interfere with outdoor activities, and sound levels exceeding 55 decibels would both interfere with and cause annoyance to people engaged in outdoor activities.¹¹⁰ The EPA represented these sound levels as averages over a 24-hour period because the agency acknowledged that a human’s daily exposure to noise fluctuates throughout the day.¹¹¹

Additionally, the EPA gathered data reflecting community reactions to environmental noise.¹¹² The EPA reviewed studies that used two methods to quantify human reaction to noise: (1) examining responses to social survey questionnaires; and (2) quantifying the number of overt actions taken by individuals or groups in response to noise.¹¹³ The EPA concluded that at an outdoor day-night sound level¹¹⁴ of 55 decibels, less than one percent of households would submit complaints, and only up to 17 percent of people would submit “highly annoyed”¹¹⁵ as a response on a social survey questionnaire. However, noise exceeding an outdoor day-night sound level of 65 decibels could be expected to generate complaints by five percent of households, and according to social survey responses roughly 33 percent of individuals were “highly annoyed”¹¹⁶ when exposed to those levels.

The EPA clarified the 1974 report by publishing a press release (“1974 press release”).¹¹⁷ The 1974 press release spotlighted the EPA’s finding that limiting exposure to sound levels at or below 70 decibels could help prevent hearing loss.¹¹⁸ Additionally, the EPA sought to ensure that the public understood that the sound levels identified in the 1974 report did not represent peak or single events, and that the EPA

108. *Id.* at 4–5.

109. INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY, *supra* note 101, at 5.

110. *Id.*

111. *Id.*

112. *Id.* at D-28.

113. *Id.*

114. Day-night sound levels are represented by the average 24-hour decibel sound level plus a 10-decibel reduction during nighttime hours. *Id.* at 4.

115. *Id.* at D-51.

116. *Id.*

117. Press Release, EPA, EPA Identifies Noise Levels Affecting Health and Welfare (Apr. 2, 1974).

118. *See id.*

derived those sound levels from averaging measurements of the sound's energy over a period of time.¹¹⁹

In 1978, the EPA condensed and supplemented the 1974 report with its publication of the 1978 levels report.¹²⁰ Recognizing the confusion that still existed even after the 1974 press release, the 1978 levels report stated that “[d]ecisions about how much noise is too much noise for whom, for how long, and under what conditions demand consideration of economic, political, and technological matters far beyond the intent of the [1974 levels report],”¹²¹ and those decisions are more appropriately embodied as regulations.

The 1978 report provides baseline sound level measurements for several locations.¹²² People living in urban row housing on major avenues could expect an average day-night sound level of 68 decibels. By contrast, people living in rural residential areas could expect an average sound level of nearly 40 decibels.¹²³ The 1978 levels report also provides hypothetical examples of specific individuals exposed to noise in both suburban and urban environments.¹²⁴ For instance, a suburban housewife experienced an average sound level of 64 decibels, while a factory-worker experienced 87 decibels.¹²⁵

More recently, the EPA published guidance addressing the effects of noise on children (“2009 report”).¹²⁶ The purpose of the 2009 report is to provide information to parents, childcare providers, and teachers about activities that could lead to noise-induced hearing loss (“NIHL”) in children.¹²⁷ Unlike the 1974 levels report, which focused largely on sound level averages, the 2009 report emphasized that a single sound exposure of 85 decibels is damaging to children’s hearing.¹²⁸ The 2009 report also identified approximate harmful sound levels produced by everyday sources a child may encounter.¹²⁹ For example, hair dryers, lawnmowers, and city traffic can produce sound levels exceeding 85

119. *See id.*

120. U.S. ENVTL. PROT. AGENCY OFF. OF NOISE ABATEMENT AND CONTROL, 550/9-79-100, PROTECTIVE NOISE LEVELS (1978).

121. *Id.* at 25.

122. *Id.* at 8.

123. *Id.*

124. *Id.* at 15.

125. *Id.*

126. U.S. ENVTL. PROT. AGENCY OFF. OF AIR AND RADIATION, EPA-410-F-09-003, NOISE AND ITS EFFECTS ON CHILDREN (2009).

127. *Id.*

128. *Compare id.* (addressing event-based noise exposures), with INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY, *supra* note 101, at 4–5 (primarily utilizing 24-hour averaged sound exposures).

129. NOISE AND ITS EFFECTS ON CHILDREN, *supra* note 126, at 1.

decibels.¹³⁰ Moreover, commercial jets, chainsaws, fireworks, gunshots, and Walkmans can generate levels greater than 100 decibels.¹³¹ Although the 2009 report specifically relates to child noise exposure, the report is also useful in identifying event-based noise emissions that adults may experience.¹³²

While the EPA conducted extensive research and produced several publications on the subject of noise, some state and other federal agencies have taken a serious regulatory approach.¹³³ The Federal Highway Administration (“FHWA”) described the purpose of its regulations as follows:

[T]o provide procedures for noise studies and noise abatement measures to help protect the public’s health, welfare and livability, to supply noise abatement criteria, and to establish requirements for information to be given to local officials for use in the planning and design of highways approved pursuant to title 23 U.S.C.¹³⁴

Pursuant to 23 U.S.C. § 109(i),¹³⁵ by which Congress directed the FHWA to “promulgate standards for highway noise levels compatible with different land uses,”¹³⁶ the FHWA established noise abatement criteria codified in its regulations. Those criteria consist of hourly A-weighted sound level decibels¹³⁷ designed for impact determinations¹³⁸ only.¹³⁹ Noise abatement criteria are targets that the FHWA hopes to achieve when designing a highway project.¹⁴⁰

The FHWA regulations, sections 772.11 and 772.13(a), direct state highway agencies proposing to use federal highway funds for a type II project¹⁴¹ to gather information and render an impact determination regarding traffic noise.¹⁴² Specifically, the regulations direct the highway agency to establish a target of at least one dBA less than the

130. *Id.* at 2.

131. *Id.*

132. *See id.*

133. *See* 23 C.F.R. §§ 772.1–772.19 (2015).

134. *Id.* § 772.1

135. 23 U.S.C.S. § 109(i) (2015).

136. *Id.*; *see also* Table 1, 23 C.F.R. § 772 (2015).

137. *See* OSHA, *supra* note 69.

138. *See* 23 C.F.R. § 772.5 (defining traffic noise impacts as the “[d]esign year build condition noise levels that approach or exceed the [noise abatement criteria] listed in Table 1 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels”).

139. Table 1, *supra* note 136.

140. *See* 23 C.F.R. § 772.11 (2015).

141. A type II project is “[a] Federal or Federal-aid highway project for noise abatement on an existing highway.” 23 C.F.R. § 772.5.

142. *Id.* § 772.11(g).

criteria set forth in Table 1, 23 U.S.C. § 772, to determine and analyze the expected impacts of traffic noise.¹⁴³

The criteria listed in Table 1 are separated into activity categories that include a variety of land uses.¹⁴⁴ The most stringent noise abatement criteria apply to “[l]ands on which serenity and quiet are of extraordinary significance”¹⁴⁵ and are set at 57 Leq(h). For a residential area, a 67 Leq(h) level applies.¹⁴⁶ Significantly, although the FHWA developed a category encompassing mining operations, the FHWA did not assign criteria to the category.¹⁴⁷

Therefore, the federal government’s executive branch attempted to tackle noise pollution through the use of guidance documents and industry specific-regulations.¹⁴⁸ However, those attempts were limited to federal programs and actions and have failed to establish noise standards for the Pennsylvania mining industry.¹⁴⁹

2. State Noise Abatement Guidelines

In contrast to the federal government’s approach, Pennsylvania and New Jersey have promulgated noise-restricting regulations limiting sound levels produced by various industries.¹⁵⁰

The Pennsylvania Department of Transportation (“PennDOT”) promulgated regulations limiting noise levels generated on the state’s roadways.¹⁵¹ To establish sound level limits, PennDOT considered several factors including vehicle weight, roadway surface type, speed, and measurement distance.¹⁵² For example, PennDOT limited the permissible sound level to 86 decibels when generated by a vehicle over 6,000 pounds, traveling less than 35 miles per hour, when measured from

143. *Id.* § 772.11(a), (g).

144. *Id.*

145. Table 1, *supra* note 136. Leq(h) is “[t]he equivalent steady-state sound level which in a stated period of time contains the same energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.” 23 C.F.R. § 772.5.

146. Table 1, *supra* note 136.

147. *Id.*

148. See INFORMATION ON LEVELS OF ENVIRONMENTAL NOISE REQUISITE TO PROTECT PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY, *supra* note 101; PROTECTIVE NOISE LEVELS, *supra* note 120; NOISE AND ITS EFFECTS ON CHILDREN, *supra* note 126; 23 C.F.R. §§ 772.1–772.19.

149. See *Chimel v. Pa. Dep’t of Env’tl. Prot.*, No. 2011-033-M, 2014 WL 6835113, at *30 (Pa. Env’tl. Hrg. Bd. Nov. 25, 2014).

150. See 67 PA. CODE § 157.1 (2015); see also 7 N.J. ADMIN. CODE § 7:29-1.1 *et seq.* (2015).

151. 67 PA. CODE § 157.1.

152. *Id.* § 157.12.

a distance of 50 feet from the roadway.¹⁵³ PennDOT limited that same vehicle to a maximum sound level of 90 decibels when traveling at greater than 35 miles per hour.¹⁵⁴ Also, PennDOT varied the permissible measured sound level by two decibels depending on whether the measurement was obtained from a soft or hard surface—two decibels are added for a soft surface, while two are subtracted for a hard surface.¹⁵⁵

Taking a broader approach than Pennsylvania, New Jersey's Department of Environmental Protection ("NJDEP") adopted regulations limiting noise levels produced by a variety of sources.¹⁵⁶ NJDEP established regulations to prevent any person from "caus[ing], suffer[ing], allow[ing], or permitt[ing]"¹⁵⁷ specified sound levels produced by commercial or industrial activities as measured from the citizen's residential property line. These standards vary based upon the time of day and the sound's duration.¹⁵⁸ Between 7:00 a.m. and 10:00 p.m., continuous airborne sounds¹⁵⁹ may not exceed 65 decibels depending on the frequency of the sound.¹⁶⁰ However, during the same time period, impulsive sounds¹⁶¹ may not exceed 80 decibels.¹⁶²

Additionally, NJDEP placed more stringent limitations on sound levels during nighttime hours.¹⁶³ From 10:00 p.m. to 7:00am, continuous sound levels may not exceed 50 decibels.¹⁶⁴ Impulsive sounds may not exceed 80 decibels, or if the sound occurs more than four times in any one measured hour, more than 50 decibels.¹⁶⁵ Furthermore, the NJDEP requires that the person measuring the sound level must be qualified and use a calibrated, approved sound meter when obtaining a measurement.¹⁶⁶

C. *A Recommended Standard For Pennsylvania*

Pennsylvania should adopt a decibel-based standard for operational mining noise because such a standard will likely streamline the litigation

153. *Id.* § 157.11(a)(1).

154. *Id.* at Table 1.

155. *Id.*

156. *See* 7 N.J. ADMIN. CODE § 7:29-1.1 *et seq.* (2015).

157. *Id.* § 7:29-1.2(a).

158. *Id.* § 7:29-1.1.

159. Airborne sounds are those lasting more than one second. *Id.*

160. *Id.*

161. Impulsive sounds are those containing a single burst or pressure peak lasting less than one second. *Id.*

162. *Id.* § 7:29-1.2.

163. *Id.* § 7:29-1.1.

164. *Id.*

165. *Id.* § 7:29-1.2.

166. 7 N.J. ADMIN. CODE § 7:29-2.3, 2.5.

process, offer more predictability to the industry, and increase protection for citizens.¹⁶⁷ Currently, Pennsylvania courts require plaintiffs to provide evidence describing the surrounding community's perception of the noise at issue.¹⁶⁸ However, Pennsylvania courts refuse to allow decibel-based sound level readings to satisfy that burden because no benchmark currently exists.¹⁶⁹ Instead, the court system wastes its time and resources in an effort to decipher a particular community's subjective perception of operational mining noise.¹⁷⁰

Pennsylvania should regulate operational mining noise using components similar to the standard adopted by the NJDEP.¹⁷¹ First, like the NJDEP, Pennsylvania should adopt a decibel-based threshold that a citizen may use to prove that a noise source constitutes a public nuisance *per se*.¹⁷² Also, Pennsylvania should establish uniform guidelines similar to the NJDEP's to control the method by which an individual obtains sound level readings for use in court.¹⁷³

The Department can eliminate the burden to prove the existence of a public nuisance by creating a noise level standard for the courts.¹⁷⁴ If a standard is created, the courts would have a bright-line rule, capable of uniform application throughout the Commonwealth.¹⁷⁵ Additionally, because the standard will be based upon scientific data, the courts would have no need to adduce testimony from the surrounding community in each case.¹⁷⁶

Like the NJDEP, Pennsylvania regulators should adopt specific requirements for the measurement of a decibel-based sound level.¹⁷⁷ This would avoid the situation in *Plumstead Township*, where the Board

167. See generally *Chimel v. Pa. Dep't of Env'tl. Prot.*, No. 2011-033-M, 2014 WL 6835113, at *30 (Pa. Env'tl. Hrg. Bd. Nov. 25, 2014) (describing the litigation process in the absence of a regulatory standard).

168. See *Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674, at *26 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

169. See *Chimel*, 2014 WL 6835113, at *31.

170. See *id.* at *30.

171. See 7 N.J. ADMIN. CODE § 7:29 (2015).

172. See *id.* § 7:29-1.2(a).

173. See *id.* § 7:29-2.3, 2.5.

174. See *Chimel*, 2014 WL 6835113, at *31.

175. See *Martell's Waters Edge, L.L.C. v. Governing Body of the Twp. of Berkeley*, No. A-5746-08T2, 2010 N.J. Super. LEXIS 726, at *9-11 (N.J. Super. Ct. App. Div. Apr. 7 2010) (stating that the appellant's expert used sound level readings to determine that music from a bar fell within the requirements of 7 N.J. ADMIN. CODE § 7:29-1.2); see also *State v. Krause*, 945 A.2d 116, 118-19 (N.J. Super. Ct. App. Div. 2008) (upholding a municipal sound ordinance because no evidence was presented showing that the ordinance was less stringent than 7 N.J. ADMIN. CODE § 7:29-1.1).

176. See *Martell's Waters Edge*, 2010 N.J. Super. LEXIS 726, at *9-11; see also *Krause*, 945 A.2d at 118-19.

177. See N.J. ADMIN. CODE § 7:29-2.3, 2.5 (2015).

was forced to evaluate the credibility of two experts utilizing differing methods of obtaining sound level readings.¹⁷⁸ The NJDEP eliminated such concerns by requiring the individual measuring the sound to obtain a certification, follow a specific method for measurement, and use approved equipment.¹⁷⁹ If Pennsylvania follows the NJDEP's example, the burden upon Pennsylvania courts to compare differing forms of expert credentials, methods, and equipment, would be considerably reduced.¹⁸⁰

Additionally, Pennsylvania can codify and bolster the Department's internal standard identified in *Chimel*.¹⁸¹ In *Chimel*, Department employees testified "that the Department uses 68 decibels during the day and 65 decibels at night at the property line to evaluate whether the noise from a permitted operation constitutes a public nuisance."¹⁸² The Board refused to recognize that standard as valid because the Department was unable to present the testimony of the specific employee that developed the standard.¹⁸³ However, the Board indicated that it would have been receptive to the Department's decibel-based standard had the Department introduced testimony sufficient to establish and support that standard as reasonable.¹⁸⁴ Therefore, if presented with the opportunity, the Department should adopt a regulatory decibel-based standard based on its prior internal determinations, and bolster that standard with the significant procedural aspects of NJDEP's regulatory scheme.

IV. CONCLUSION

The Commonwealth of Pennsylvania is in need of a decibel-based approach to regulate the effects of operational mining noise on the public. The use of public nuisance law is creating a significant burden on plaintiffs to show how the surrounding community perceives noise.¹⁸⁵ Unfortunately, that burden is rarely met by average citizens and leads to a highly subjective and fact-specific inquiry by the court system.

Rather, if Pennsylvania adopted a regulation containing a bright-line decibel-based standard, the court could uniformly use that standard as a threshold throughout the Commonwealth. Consequently, any citizen

178. See *Plumstead Twp. v. Pa. Dep't of Env'tl. Res.*, No. 91-214-M, 1995 WL 387674, at *27 (Pa. Env'tl. Hrg. Bd. June 14, 1995).

179. See N.J. ADMIN. CODE § 7:29-2.3, 2.5 (2015).

180. See *id.*

181. *Chimel v. Pa. Dep't of Env'tl. Prot.*, No. 2011-033-M, 2014 WL 6835113, at *29-30 (Pa. Env'tl. Hrg. Bd. Nov. 25, 2014).

182. *Id.*

183. *Id.* at *31.

184. *Id.*

185. See *id.* at *30 (discussing the requirement that the court must see evidence pertaining to the community's perception of the noise at issue).

substantiating a claim of excessive operational mining noise would need only appear in court with a certified sound level measurement in excess of the regulatory standard and establish a causal link to the mining operator. Such a standard would benefit the court system by alleviating the time and resources spent on public nuisance inquiries. This standard would also benefit citizens who would experience increased predictability before the courts and, ultimately, greater enjoyment of their communities.