



COALEX STATE COMPARISON REPORT - 319

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Sylvia Wilcox, Esquire
Department of Natural Resources
Division of Reclamation
402 West Washington Street
Indianapolis, Indiana 46204

TOPIC: MONITORING GROUND VIBRATION LIMITS

INQUIRY: The Indiana equivalent to 30 CFR 816.67(d) lists three methods for proving compliance with maximum ground vibration limits established in the blasting plan: maximum peak-particle velocity limits, scaled-distance equation, and blasting-level chart. Is there any information on following questions:

1. Who determines which of the three methods is employed at a particular mine site, the operator or the regulatory authority?
2. Are these methods listed in order of priority, if not, what factors go into determining which method is best for a site?
3. Do other states' regulations follow the federal rules? Do other states' regulations dictate or prioritize the methods to be used by the operator?

SEARCH RESULTS: Research was conducted using the COALEX Library and other materials in LEXIS. Preambles to the federal regulations for 816.67(d) [formerly found at 816.65(h)] provide excellent descriptions of the three methods employed to measure ground vibrations, problems associated with each method and special conditions under which alternative methods may be used. Generally, state regulations follow the language of the federal rule.

No information was identified that indicates that one method has priority over another nor was material identified which explicitly states that the operator or the regulatory authority determines the method to be used. However, blasting plan regulations (780.13) require the operator to provide detailed monitoring information in the application and the preamble to blast monitoring regulations (816.67) discuss several aspects of operator and regulatory authority responsibilities.

Along with regulatory material listed below and attached are a letter from the OSM Indianapolis Field Office addressing these issues, an OSM Directive and decisions on related aspects of blast monitoring.



REGULATION HISTORY

44 FR 14902 (MARCH 13, 1979). Preamble. 816.61-816.68 Use of explosives.

The preambles to these sections provide descriptions of the alternative regulations considered, comments received on each option and the rationale for regulations promulgated. Also included are descriptions of different measurement methodologies and references to technical literature.

45 FR 51547 (AUGUST 4, 1980). Notice of suspension and statement of policy regarding effect on state programs.

Responding to district court decisions, OSM suspended portions of 816.65(f) and 817.65(f) relating to blasting distances.

46 FR 6982 (JANUARY 22, 1981). Proposed amendments to interim and permanent rules. Use of explosives.

This preamble provides an excellent explanation of the regulatory authority's role in establishing site specific criteria for allowable maximum peak particle velocity and a thorough discussion of measurement options.

46 FR 32455 (JUNE 23, 1981). Withdrawal of proposed rules. Use of explosives.

The proposed regulations for ground vibrations and distance limits were withdrawn to determine where they might be "excessive, burdensome or counterproductive."

47 FR 12760 (MARCH 24, 1982). Proposed rules. Use of explosives.

Three options were proposed for the control of ground vibrations:

"(1) A peak-particle velocity for each permit based in site-specific data;
(2) A variable ground-vibration limit based on distance to the nearest structure; and
(3) A constant particle-velocity criterion of 1.0 inch per second at any structure outside the permit area."

48 FR 9788 (MARCH 8, 1983). Final rule. Use of explosives.

Under Section 515(b)(15)(C) of the Act, the regulatory authority is required "to establish limits on the use of explosives based on physical conditions of the site so as to prevent injury to persons and damage to public and private property outside the permit area. Ground vibration is among the most relevant factors which must be considered."



The final rule governing ground vibration incorporated aspects of each of the three options proposed. Three methods for ground vibration limitation, varying in complexity and expense in application, were provided in 816.67(d). [816.65 was removed.]:

"(1) Seismic monitoring of peak particle velocity,
(2) use of a scaled-distance equation without monitoring, and
(3) complex monitoring of velocity at associated frequencies."

"Each allows a somewhat different approach to control of blasts, but each provides equivalent levels of damage prevention."

There is no explicit statement in the preamble to Section 816.67(d) as to who determines which method is used; however, the preambles to Sections 780.13 (blasting plans) and 816.67(b)(2)(i) (airblast monitoring) do provide information on the responsibilities of the operator and the regulatory authority:

"780.13(b)...provides that each application must contain a description of any system to be used to monitor compliance with the standards of Section 816.67, including the type, capability, and sensitivity of any blast monitoring equipment and proposed procedures and locations of monitoring."

816.67(b)(2)(i) "[T]he final rule includes a general provision for periodic airblast monitoring by the operator in which the locations and the periods of such monitoring are left to the discretion of operators and the regulatory authority. A sentence has been added...to emphasize that the regulatory authority may specify monitoring locations and determine which blasts have to be monitored."

56 FR 59904 (NOVEMBER 26, 1991). Denial of petition for rulemaking.

The denial of the petition to amend certain provisions of 816.62 and 816.67 is enclosed for background.

OSM INTERPRETIVE LETTER from the Indianapolis Field Office to Michael Sponsler (date 3/15/95).

The IFO agreed with the state's interpretation that the permittee must choose the method of proving compliance with ground vibration limits and this must be clearly defined in the blast plan.

In reviewing the regulations published on March 8, 1983, the IFO stated:

"The methods for compliance options in the Federal blasting regulations are presented as alternatives. but there is no language either in the rules or preamble that would require an operator to exclusively choose a single method of demonstrating compliance for all situations. However, the operator and regulatory authority are obligated to select



a method of compliance, or an appropriate combination of methods, as designated in the blast plan that is consistent with known site conditions and which will prevent injury to persons and damage to public and private property outside the permit area."

OSM DIRECTIVE, Subject No. TGR-1, Transmittal No. 315, "OSMRE Blasting Guidance Manual" (Issued 1/28/87).

The directive announced the availability of the technical guidance document.

STATE REGULATORY PROGRAMS

The following excerpts from discussions of state program amendments corresponding to 780.13 and 816.67 are enclosed for background:

1. 55 FR 21304 (MAY 23, 1990). West Virginia. Final rule.
2. 53 FR 43112 (OCTOBER 25, 1988). Illinois. Final rule.
3. 49 FR 13494 (APRIL 5, 1984). Illinois. Final rule.
4. 51 FR 4485 (FEBRUARY 5, 1986). Colorado. Final rule.
5. 51 FR 17478 (MAY 13, 1986). Indiana. Final rule.
6. 49 FR 41020 (OCTOBER 19, 1984). Final rule.

Copies of these state regulations are also enclosed for background:

1. PENNSYLVANIA Reg. Sec. 87.127 Use of Explosive; surface blasting requirements (1991).
2. WYOMING Reg. Sec. 4 Blasting Standards (1990).
3. OHIO Reg Sec. 1501:13-9-06 Use of Explosives (1987).
4. KENTUCKY Reg. Sec. 405 KAR 16:120, Sec. 5 Seismographic measurements (1985).

CASE LAW

These decisions address relevant aspects of blast monitoring:

TURNER BROS., INC. v OSM, 92 IBLA 381, IBLA 85-529 (1986).

TBI "did not maintain proper and complete blasting records, and did not blast within the weight/distance formula." Complete seismographic records were described as "including the visual wave form on a tape with calibration and range, the names of the persons taking the reading, where the seismograph was placed and located, the names of the person and/or firm doing the analysis and the results of the analysis."

MR. & MRS. WILLIAM J. HAMILTON, IBLA 87-261, 1990 IBLA LEXIS 244 (1990).



The Board determined that the Hamiltons proved that K&R had engaged in blasting activities "beyond the allowable tolerances" and that the blasting activities were the cause of damage to the Hamiltons' residence.

GLASGOW QUARRY, INC., EHB Docket No. 73-334-B, 1974 Pa Envirn LEXIS 28, 1974 EHB 308 (1974).

The EHB affirmed the Department of Natural Resources' denial of a permit, finding that the blasting procedures used would result in a public nuisance.

SWARTZ v COMMONWEALTH OF PENNA., DEPT. OF NATURAL RESOURCES AND VERNELL, INC., EHB Docket No. 78-152-W, 1979 Pa Envirn LEXIS 23, 1979 EHB 144 (1979).

The EHB ruled that Swartz failed "to show that the present particle velocity...utilized by the DER to determine the safety of blasting operations for quarrying purposes near a cavern, is inappropriate in this case."

TOWNSHIP OF SALFORD v COMMONWEALTH OF PENNA., DEPT. OF NATURAL RESOURCES AND MIGNATTI CONSTRUCTION CO., INC., EHB Docket No. 76-135-C, 1978 Pa Envirn LEXIS 31, 1978 EHB 62 (1978).

"Appellants have not shown that the conditions imposed by the DER on [the surface mining and mine drainage permits] limiting intervenor's blasting operation are not adequate to safeguard the public."

PEABODY COAL CO. v RALSTON, 578 NE 2d 751 (Ind Ct App 1991).

Peabody appealed the trial court's affirmation of an agency determination that Peabody's blasting exceeded airblast limits. The case was reversed and remanded. The court agreed with Peabody argument that the trial court had "applied an improper standard regarding the shifting burdens involved in an agency determination."

DICKERSON v AMAX, INC., 739 F 2d 270 (7th Cir 1984).

Amax challenged a jury's verdict in this case involving the level of forces produced by Amax's blasting and damage to the plaintiff's house. In affirming the judgment of the district court, the circuit court found:

"The evidence in this case is in sharp conflict. Consequently, we must defer to the jury's resolution of that conflict."

ATTACHMENTS

- A. 44 FR 14902 (MARCH 13, 1979). Preamble. 816.61-816.68 Use of explosives.



- B. 45 FR 51547 (AUGUST 4, 1980). Notice of suspension and statement of policy regarding effect on state programs.
- C. 46 FR 6982 (JANUARY 22, 1981). Proposed amendments to interim and permanent rules. Use of explosives.
- D. 46 FR 32455 (JUNE 23, 1981). Withdrawal of proposed rules. Use of explosives.
- E. 47 FR 12760 (MARCH 24, 1982). Proposed rules. Use of explosives.
- F. 48 FR 9788 (MARCH 8, 1983). Final rule. Use of explosives.
- G. 56 FR 59904 (NOVEMBER 26, 1991). Denial of petition for rulemaking.
- H. OSM INTERPRETIVE LETTER from the Indianapolis Field Office to Michael Sponsler (date 3/15/95).
- I. OSM DIRECTIVE, Subject No. TGR-1, Transmittal No. 315, "OSMRE Blasting Guidance Manual" (Issued 1/28/87).
- J. 55 FR 21304 (MAY 23, 1990). West Virginia. Final rule.
- K. 53 FR 43112 (OCTOBER 25, 1988). Illinois. Final rule.
- L. 49 FR 13494 (APRIL 5, 1984). Illinois. Final rule.
- M. 51 FR 4485 (FEBRUARY 5, 1986). Colorado. Final rule.
- N. 51 FR 17478 (MAY 13, 1986). Indiana. Final rule.
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- P. PENNSYLVANIA Reg. Sec. 87.127 Use of Explosive; surface blasting requirements (1991).
- Q. WYOMING Reg. Sec. 4 Blasting Standards (1990).
- R. OHIO Reg Sec. 1501:13-9-06 Use of Explosives (1987).
- S. KENTUCKY Reg. Sec. 405 KAR 16:120, Sec. 5 Seismographic measurements (1985).
- T. TURNER BROS., INC. v OSM, 92 IBLA 381, IBLA 85-529 (1986).
- U. MR. & MRS. WILLIAM J. HAMILTON, IBLA 87-261, 1990 IBLA LEXIS 244 (1990).
- V. GLASGOW QUARRY, INC., EHB Docket No. 73-334-B, 1974 Pa Envirn LEXIS 28, 1974 EHB 308 (1974).
- W. SWARTZ v COMMONWEALTH OF PENNA., DEPT. OF NATURAL RESOURCES AND VERNELL, INC., EHB Docket No. 78-152-W, 1979 Pa Envirn LEXIS 23, 1979 EHB 144 (1979).
- X. TOWNSHIP OF SALFORD v COMMONWEALTH OF PENNA., DEPT. OF NATURAL RESOURCES AND MIGNATTI CONSTRUCTION CO., INC., EHB Docket No. 76-135-C, 1978 Pa Envirn LEXIS 31, 1978 EHB 62 (1978).
- Y. PEABODY COAL CO. v RALSTON, 578 NE 2d 751 (Ind Ct App 1991).
- Z. DICKERSON v AMAX, INC., 739 F 2d 270 (7th Cir 1984).