

**FEDERAL REGISTER: 45 FR 25998 (April 16, 1980)**

DEPARTMENT OF THE INTERIOR

AGENCY: Office of Surface Mining Reclamation and Enforcement (OSM)

30 CFR Parts 715, 816 and 817

Disposal of Excess Spoil In Durable Rock Fills; Interpretative Ruling

ACTION: Final Interpretative Rule for 30 CFR 715.15(d), 816.74, and 817.74.

**SUMMARY:** This Notice announces an interpretative rule which advises the public of OSM's interpretation of 30 CFR 715.15(d), 816.74, and 817.74 relating to disposal of excess spoil in durable rock fills. The interpretative rule clarifies the regulations providing for alternate methods for disposal of hard rock spoil. The subject regulations were among a number of final regulations published in the Federal Register on March 13, 1979, 44 FR 15311-15463 and on May 25, 1979, 44 FR 30610-34.

EFFECTIVE DATE: April 16, 1980.

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**SUPPLEMENTARY INFORMATION:**

Section 501 of the Surface Mining Control and Reclamation Act ("Act") requires the Secretary to promulgate regulations establishing initial and permanent regulatory programs for surface coal mining operations. Final regulations concerning head-of-hollow and valley fills were promulgated on May 25, 1979, 44 FR 30610 and on March 13, 1979, 44 FR 15311.

30 CFR 715.15(d), 816.74 and 817.74 provide an alternative method for disposal of excess spoil in instances where it can be demonstrated that 80 percent or more of the volume of excess spoil is durable rock. This alternate method was added in response to commenters which had criticized the Office for applying criteria designed for fills composed of soil-sized particles when many mines are constructing fills composed of rock-sized particles.

There presently exist approximately 10 approved permits for durable rock fills issued by state regulatory authorities pursuant to 30 CFR 715.15(d). Several questions have arisen concerning the meaning of 30 CFR 715.15(d) as applied to these permits. Specifically the meanings of "rock" and "hard rock spoil" have been questioned. Additionally, there may be uncertainty over when in the durable rock fill construction process OSM or the state regulatory authority may make tests to determine whether at least 80 percent of the material in a fill is durable rock. Misunderstandings of these terms could cause an operator to construct a potentially unstable fill structure (instability may result from segregation of large percentages of fine materials which may lead to settlement; increase in sediment load to the water draining through the fill; clogging of the free drainage in the rock fill; or development of weak zones or layers parallel to the outslope of the fill), which might ultimately result in slides. Due to this potential for dangerous and environmentally damaging slides, this interpretative rule is effective upon publication. Under the permanent regulatory program States may become the primary implementing authority if they adopt State programs that meet the requirements of the Act and the permanent Federal regulations. Since this rule interprets provisions of the permanent regulatory program, the Office will, in its oversight capacity, follow this interpretative rule. The Office understands that no currently approved state program has approved any durable rock fill permits and thus the immediately effective date of this interpretative rule will not unfairly effect such approved state programs.

During the course of administrative review of a series of notices of violation, in which the Office charged that certain permitted fills had not been constructed with proper durable rock, the Office's definition of rock fill was questioned. The operator had performed slake durability tests on core samples of the overburden prior to blasting and the results met the regulatory standards. This procedure was approved by the regulatory authority as sufficient to demonstrate that the material which would eventually be placed in the fill was durable. The overburden was then blasted, handled, and transported to the fill site.

OSM inspectors observing the dumping of such spoil into the permitted durable rock fill determined that the material contained more than the allowable 20 percent of soil-sized particles. Notices of violation were issued which directed

the operator to assure that fills were constructed with material consisting of durable, rock-sized particles rather than the earth material in use at the time. The notice stated that the fill material would be considered in compliance if 20 percent or less of the material passed through a No. 4 (1/4 inch) sieve.

The operator contended that the regulation did not contain a standard for particle size and that by meeting the durability test on rocks in situ, as approved by the regulatory authority, it had complied with the regulation for durable rock fills. In a similar vein, the operator contended that the regulations delegated to the state regulatory authorities the sole decision-making role in establishing the standards for the use of the required slake tests.

This interpretative rule makes it clear that the Office intended the word "rock" to have its usual meaning as set out in the engineering and technical literature cited in the preamble to the regulation. The Office assumed that because Section 715.15(d) (and Sections 816.74/817.74) provided an alternative to fill construction methods designed for earth fill, it would be understood that the material to be dumped in a durable rock fill would necessarily be significantly larger than the soil-sized particles allowed in the earth fills. The term "rock" was intended to be understood according to the accepted engineering definition, and the use of this term by the Office in Sections 715.15(d), 816.74 and 817.74 was intended to limit the particle size of material eligible for placement in durable rock fills. The literature upon which the Office relied in promulgating Section 715.15(d), discussed in detail below, employs the 1/4 inch sieve test to distinguish rock and gravel from soil. If less than 20 percent by volume of the spoil material passes through a 1/4 inch sieve after blasting and transporting operations incident to mining, and if it also meets the durability test, it will be considered rock and will be eligible to be placed in a durable rock fill.

This interpretative rule also explains the respective roles of the Office and the state regulatory authorities in the permitting of durable rock fills, the establishment of specific guidelines and criteria for using the slake index and slake durability tests to determine the resistance of hard rock spoil to slaking, and the enforcement of performance standards in the construction of durable rock fills as set out in Sections 715.15(d), 816.74 and 817.74. This interpretative rule does not alter the provisions of Sections 715.15(d), 816.74 and 817.74 which allow state regulatory authorities to approve alternate methods for disposal of hard rock spoil, and which allow state regulatory authorities to establish guidelines and criteria for use of the tests for determining the durability of rock for the purpose of approving the use of alternate disposal methods on proposed sites. However, this rule interprets Sections 715.15(d), 816.74 and 817.74 to make clear that these powers granted to the state regulatory authorities allow the Office to inspect (consistent with the differing federal inspection powers and purposes of the interim and permanent regulatory programs) durable rock fills constructed with state approval pursuant to Sections 715.15(d), 816.74 or 817.74 to determine whether such fills in fact contain not less than 80 percent rock by volume (that is, that not more than 20 percent of the fill material, by volume, passes through a 1/4 inch sieve), and that such rock, as it reposes in the fill, is durable as disclosed by the slake index and slake durability tests performed under the guidelines and criteria established by the regulatory authority. {25999}

This interpretation of Sections 715.15(d), 816.74 and 817.74 resolves potential uncertainty about the federal-state relationship and the scope of regulation of durable rock fill construction by assuring that standards relevant to durable rock fills continue to apply throughout their construction, and that these standards may be enforced by the Office during the interim program without restriction by the site-specific decisions of state regulatory authorities.

This interpretative rule clarifies portions of the initial (and permanent regulations) which are national in scope. Judicial review of the regulations interpreted by this rule is governed by Section 526(a)(1) of the Act which places exclusive jurisdiction to review national rules or regulations in the District Court for the District of Columbia, 30 U.S.C., 1276(a)(1). A person wishing to challenge such national rules or regulations must file a petition for review in the District Court for the District of Columbia within 60 days from the date of their promulgation, or after 60 days if the sole grounds for the petition arose after the sixtieth day. 30 U.S.C. 1276(a)(1). Since it is also national in scope, judicial review of this interpretative rule must comply with Section 526(a)(1) of the Act. Thus, any petition for review must be filed within 60 days from the rule's effective date and must be filed in the District Court for the District of Columbia.

The Department of Interior has determined that this document is not a significant rule and does not require a regulatory analysis under Executive Order 12044 and 43 CFR Part 14. The Department of Interior has also determined that the adoption of this interpretative rule does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969.

## TECHNICAL DISCUSSION

30 CFR 715.15(d) was adopted in the interim regulations on May 25, 1979 (44 FR 30628) and corresponds to 30 CFR 816.74 and 817.74 of the permanent regulations adopted March 3, 1979. These sections were a result of comments requesting allowances for practices which would satisfy site specific necessity. [See AMC/NCA 1977, pp. 1, 3-4 discussed in the preamble to the permanent regulations at 44 FR 15208 and 15270 (1979)]. However, as pointed out in the May 25, 1979 preamble to Section 715.15(d) "this section has been adopted solely for durable rock fills ." (Emphasis added). 44 FR 30617 (1979). That an action was limited to allowing durable rock in such fills because of demonstrated engineering difficulties with other materials. The preamble to 30 CFR 715.15(d) documented both the reasons for allowing durable rock fills and the reasons for limiting this alternative method of disposal of excess spoil to durable rock.

It was also pointed out in that preamble that the sole problem resulting from use of rock fill in dams was settlement which could lead to instability [Bragg 1975 V2 pg. 190; Canada Department of Energy, Mines and Resources 1972 pg. 1-4]. 44 FR 30617. In addition, less durable or more impermeable zones develop from the deterioration of shale materials [Shamburger 1975 V1 pg. 48, 65] which may contribute to fill failures. Because of this, several states that have experience with shale as used in rock fill dams or embankments require special criteria for determining when shale may be used in a rock fill. Indiana allows the use of shale in lifts up to a 24-inch maximum if the "rocklike-shale (determined from durability tests) does not break down to sizes smaller than 8 inches" [Shamburger 1975 V1 pg. 62]. The Corps of Engineers excludes clay shale from compacted rock fills (dams or embankments) recommending that "rocks that break down to fine size during excavation, placement or compaction are unsuitable as rock fill and such materials should be treated as soils" [Notes for Construction of Earth and Rockfill Dams, Army Corps of Engineers 1971 pg. M6]. The Corps indicates that the maximum amount of material passing the No. 4 (1/4 inch) sieve should be 20 percent for materials 6 inches or less in size after spreading and rolling [Notes for Construction of Earth and Rockfill Dams, Army Corps of Engineers 1971 plate 9]. Grain size distribution curves for typical embankment materials [Davis, Handbook for Applied Hydrology 1969 pg. 18-9] indicate that for dumped rock fill, rolled rock fill, and pervious cobble gravel the amount of material passing the No. 4 (1/4 inch) sieve is 17 percent or less.

The Unified Soils Classification System and the Bureau of Reclamation ["Design of Small Dams (1973) and "Earth Manual" (1974)] define "soil" as material ranging in size from 3 inches to the #200 sieve or clay fraction. That fraction ranging in size from 3 inches to a 1/4 inch sieve is called "coarse soil" or "gravel." Rock for use in rock fill dam construction is identified as well-graded material ranging in size from 1/4 inch and up. [U.S. Bureau of Reclamation 1973 pp. 310-311].

As indicated in the May 25, 1979 Preamble:

"As literature has shown overburden materials may contain silt and sandsize particles. The ability of these materials to withstand weathering and deterioration is dependent upon the type of sediment which occurs as an initial deposit before consolidation and upon the type of cementing material which consolidates the sediment into rock (Mason, 1966, pp. 155-156), Drnevich and others, (1976, p. 58) and the U.S. Department of the Navy (1974, p. 7-7-14) have shown that surface mine spoils or soils with silt-size particles lose shear strength with time due to exposure to water and weathering. Shales have historically caused many geotechnical problems from improper treatment and required elaborate remedial design (Chassie and Coughmour, 1976, pp. 65-66; Shamburger, and others, 1975, pp. 1-8; Bragg and others, 1975, pp. 1-5; and DiMillio, 1978, p. 153). These types of materials require special consideration and cannot be indiscriminately disposed of. Past excess spoil disposal practices, both in drainways and over mine bench out slopes have resulted in numerous safety and environmental problems where spoil was placed for gravity methods. (Appalachian Regional Commission and the Department for Natural Resources and Environmental Protection, 1974, pp. 5-7; Weigle, 1966, p. 67; Robins and others, 1977, pp. 1-3; Loy and others, 1978, pp. 69-74; and Plass, 1967, p. 1)." 44 FR 30618.

Since the premise that the solution to safe end dumped fills is rock durability, OSM had chosen 1/4 inch as the lowest limit for determining the amount of durable hard rock spoil material required in a rock fill. This takes into account that material which is greater than 1/4 inch in size thereby including in the term "rock" the coarse-grained fraction of soil material. This was determined to be of value in developing good gradation of the rock fill materials thus aiding in well-developed compaction, yet providing for the development of good drainage. Therefore coarse grained non-slaking soil (gravel), rock fragments and rock, that will not pass the 1/4 inch sieve shall make up 80 percent or more, by volume of rock fill on a unit basis. {26000}

The determination of durability of rock fill material has been adequately addressed in the preamble to the amended 30 CFR 715.15 (May 25, 1979) and the reader is referred to 44 FR 30615 for more information.

With respect to evaluating the durability of rock fill materials "as placed in the fill," it was noted in the May 25, 1979 preamble that the proper handling of less durable material could be a quality control problem. 44 FR 30618-619 (1979). To ensure that hard rock spoil which is gravity transported in one or two thick lifts is durable and that weak impermeable zones do not develop parallel to the fill face and thereby contribute to instability, the material placed in the fill should be able to meet the slake durability and slake index tests required in 30 CFR 715.15(d), 816.74 and 817.74. Several suggested methods for obtaining samples from the fill are given in the Department of the Navy "Design Manual: Soil Mechanics Foundations and Earth Structures" 1971 [pp. 7-9-10]. The sampling methods identified are for density tests but should work equally well for other test methods.

The Office interprets the durable rock fill regulations to mean the fill material must contain at least 80 percent by volume of non-slaking rocks (sandstone, limestone, or other rocks) that will not pass through a 1/4 inch sieve. Twenty percent or less of the material may be particles that will pass through a 1/4 inch sieve. This rule does not directly effect the validity of permits issued prior to its promulgation. Operations under those permits must however, actually meet the performance standards of Section 715.15(d). A state permit decision based on demonstrations that proposed fill material meet the rock or rock durability standards based on core samplings of material in place is proper under the regulations. The regulations do not allow this decision to excuse the operator from complying with the regulations by placing improper material in the fill. This is true whether the failure to meet the fill standards results from degradation due to transportation and handling, from placing unauthorized or untested material in the fill, from improper pre-permit testing, or any other cause.

## **PART 715 -- GENERAL PERFORMANCE STANDARDS**

Section 715.200 is added to Title 30 of the Code of Federal Regulations to read as follows:

### **SECTION 715.200 - INTERPRETATIVE RULES RELATED TO GENERAL PERFORMANCE STANDARDS.**

The following interpretations of rules promulgated in Part 715 of this chapter have been adopted by the Office of Surface Mining Reclamation and Enforcement.

(a) Interpretations of Section 715.15(d) -- Disposal of excess spoil: Durable Rock Fills .

(1) The term "rock" as used in 30 CFR 715.15(d) is interpreted to mean minerals or mineral aggregates 80% or more of which when subjected to a grain size analysis will not pass a 1/4 inch sieve (1/4 inch mesh).

(2) The term "hard rock spoil" as used in 30 CFR 715.15(d) interpreted to mean rock consisting of at least 80 percent by volume of sandstone, limestone or other rocks that will not pass 1/4 inch sieve and do not slake in water.

(3) The terms "slake durability" and "slake index tests" identified in 30 CFR 715,15(d) and used as the basis for determining "durability" of hard rock spoil, are interpreted to be applicable to rock placed in the fill and not only to rock obtained either from in place strata prior to excavation or from the spoil source prior to placement in the fill.

(4) The phrases "regulatory authority may approve" and "established by the regulatory authority" are interpreted as not limiting in any manner the authority of the Secretary to enforce Section 715.15(d) performance standards so as to ensure stable construction of durable rock fills in accordance with specific requirements of that section.

## **PART 816 -- PERMANENT PROGRAM PERFORMANCE STANDARDS -- SURFACE MINING ACTIVITIES**

New Section 816.200 is added to 30 CFR to read as follows:

### **SECTION 816.200 - INTERPRETATIVE RULES RELATED TO GENERAL PERFORMANCE STANDARDS.**

The following interpretations of rules promulgated in Part 816 of this chapter have been adopted by the Office of Surface Mining Reclamation and Enforcement.

(a) Interpretations of Section 816.74 -- Disposal of excess spoil: durable rock fills.

(1) The term "rock" as used in 30 CFR 816.74 is interpreted to mean minerals or mineral aggregates 80% or more of which when subjected to a grain size analysis will not pass a 1/4 inch sieve (1/4 inch mesh).

(2) The term "hard rock spoil" as used in 30 CFR 816.74 interpreted to mean rock consisting of at least 80 percent by volume of sandstone, limestone or other rocks that will not pass 1/4 inch sieve and do not slake in water.

(3) The terms "slake durability" and "slake index tests" identified in 30 CFR 816.74 and used as the basis for determining "durability" of hard rock spoil, are interpreted to be applicable to rock placed in the fill and not only to rock obtained either from in place strata prior to excavation or from the spoil source prior to placement in the fill.

(4) The phrases "regulatory authority may approve" and "established by the regulatory authority" are interpreted as not limiting in any manner the authority of the Secretary to enforce Section 816.74 performance standards, consonant with the scope of his authority in either an approved state program or a Federal program, whichever is in effect at the time and place of inspections, so as to ensure stable construction of durable rock fills in accordance with specific requirements of that section.

## **PART 817 -- PERMANENT PROGRAM PERFORMANCE STANDARDS -- UNDERGROUND MINING ACTIVITIES**

New Section 817.200 is added to 30 CFR to read as follows:

### **SECTION 817.200 - INTERPRETATIVE RULES RELATED TO GENERAL PERFORMANCE STANDARDS.**

The following interpretations of rules promulgated in Part 817 of this chapter have been adopted by the Office of Surface Mining Reclamation and Enforcement.

(a) Interpretations of Section 817.74 -- Disposal of excess spoil: Durable rock fills .

(1) The term "rock" as used in 30 CFR 817.74 is interpreted to mean minerals or mineral aggregates 80% or more of which when subjected to grain size analysis will not pass a 1/4 inch sieve (1/4 inch mesh).

(2) The term "hard rock spoil" as used in 30 CFR 817.74 is interpreted to mean rock consisting of at least 80 percent by volume of sandstone, limestone or other rocks that will not pass 1/4 inch sieve and do not slake in water.

(3) The terms "slake durability" and "slake index tests" identified in 30 CFR 817.74, and used as the basis for determining "durability" of hard rock spoil, are interpreted to be applicable to rock placed in the fill and not only to rock obtained either from in place strata prior to excavation or from the spoil source prior to placement in the fill.

(4) The phrases "regulatory authority may approve" and "established by the regulatory authority" are interpreted as not limiting in any manner the authority of the Secretary to enforce Section 817.74 performance standards, consonant with the scope of his authority in either an approved state program or a Federal program, whichever is in effect at the time and place of inspections, so as to ensure stable construction of durable rock fills in accordance with specific requirements of that section. {26001}

Paul L. Reeves, Acting Director.

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