CHAPTER VI: EPA HAS NOT JUSTIFIED ITS DECISION TO SUBCATEGORIZE COAL UNITS DESIGNED TO BURN COAL OF LESS THAN 8300 BTU/LB

EPA proposes MACT standards for coal- and oil-fired EGUs in five subcategories. Two are based on the BTU-content of coals, one encompasses EGUs burning "solid oil-derived" fuels (essentially petcoke), another is technology-based (IGCC units), and the last includes liquid oil-fired EGUs. 76 Fed. Reg. at 25037. While EPA correctly does not devolve the standard setting process into one based on multiple fuel-based subcategories, as it proposed to do in 2004 with its unjustified "coal-rank" based subcategorization scheme, the Agency still does not provide sufficient justification for its choice of certain of the subcategories it adopts in this rule. In particular, EPA's decision to distinguish between units burning two different kinds of coal based on its Btu content is unlawful and not reasonably justified, as set forth below.

A. EPA's Authority to Set MACT Standards for Subcategories of an Industrial Category is not Unlimited

The CAA provides only that the Agency "*may* distinguish among classes, types, and sizes of sources within a category or subcategory in establishing [MACT] standards." 42 U.S.C. § 7412(d)(1)(emphasis added). It does not permit EPA to distinguish between sources on other grounds, and does not *require any* subcategorization in MACT standard setting for a listed industry. And EPA's "subcategorization authority . . . does not authorize EPA to sidestep what Congress has plainly prohibited," or otherwise contradict Section 112's basic command to require the maximum achievable reductions in hazardous air pollution. *Natural Resources Defense Council v. Environmental Protection Agency,* 489 F.3d 1364, 1372 (D.C. Cir. 2007) ("NRDC v. EPA"). The plain text of the Act demonstrates that Congress intended EPA to create categories and subcategories in a regulated industry "as *a step toward establishing* emission standards," *id. at* 1371 (emphasis added), not as part of a scheme to provide incentives for existing sources to *avoid*

controls or standards. Where EPA sets MACT standards based on subcategories of an industry, EPA must offer a reasoned justification for the subcategories it has chosen. 42 U.S.C. §§ 7607 (d)(3), (d)(6), (d)(9). *See, e.g., Northeast Maryland Waste Disposal Authority v. EPA,* 358 F.3d 936, 947-950 (D.C. Cir. 2004) (remanding a decision to subcategorize in setting MACT standards because the Agency had not properly justified its subcategorization scheme).

B. EPA's Coal Subcategories For Existing Sources Are Not Adequately Justified On the Record, Which Shows Instead that They are Created to Preserve Poor Performance and Benefit and Prolong the Burning of Low-Btu "Junk" Coals

EPA asserts that all of the five subcategories it creates are in fact based on the combustion technology in use at facilities burning different kinds of fuels:

> Changes to the fuel type would generally require extensive changes to the fuel handling and feeding system (e.g., liquid oil-fired EGUs cannot fire solid fuel without extensive modification). Additionally, the burners and combustion chamber would need to be redesigned and modified to handle different fuel types and account for increases or decreases in the fuel volume. In some cases, the changes may reduce the capacity and efficiency of the EGU. An additional effect of these changes would be extensive retrofitting needed to operate using a different fuel.

76 Fed. Reg. at 25036. This may justify EPA's decision to distinguish units burning liquid fuels from units burning solid fuels, and IGCC units from those utilizing other methods of coal combustion. It does not, however, permit EPA's distinction between units burning coals above and below 8300 Btu/lb.[1] Although EPA implies that its proposed Btu content-based coal subcategories are not merely set to give advantage to, or allow continued burning of low-Btu "junk coals" at new facilities,

[1]Existing units such as fluidized bed boilers can similarly burn a wide variety of solid fuels, including various coal types, waste coal, and petroleum coke; they should not, therefore, be separately subcategorized.

the data and the technologies for burning different coal ranks suggest otherwise.[2] So does the Agency's rationale: that "a distinguishable difference in [emissions] *performance* exists based on … coal-fired units designed to burn coal with greater than or equal to 8,300 Btu/lb (for Hg emissions only); [and] coal-fired units designed to burn coal with less than 8,300 Btu/lb (for Hg emissions only)." 76 Fed. Reg. at 25037.

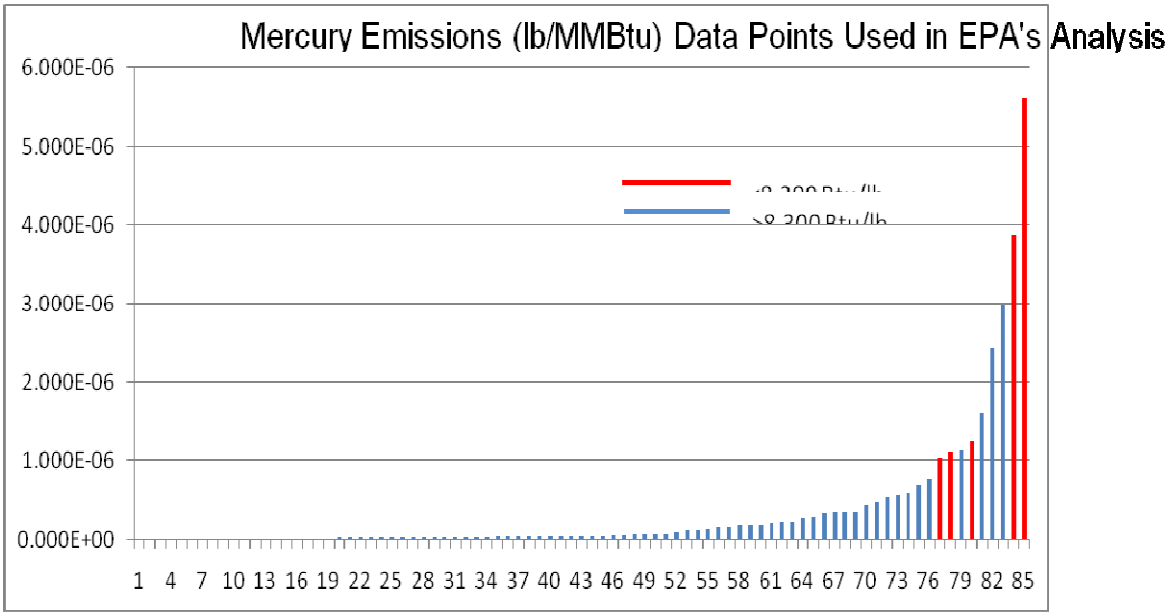
EPA's selection of the 8,300 Btu/lb heating value to subdivide the coal category is not discussed or justified in the record. EPA provides no record evidence to show that sources using fuels above and below this heating value are of a different class, type or size and, indeed, does not even claim they are. In particular, EPA has not provided a clear technical basis for its apparent conclusion that units burning coals below this heating value are of different design, or that the difference in design affects the method of pollution reduction available to such units. EPA provides no technical basis that these units have different fuel handling, burner or combustion systems. In fact, units burning lignite coals can burn other types of coals. For example units in Texas and North Dakota (where most of these lignite burning units are located) can also burn PRB sub-bituminous coals as well for fuel diversity. Physical systems for coal handling, burners, and combustion systems are the same when either fuel is burned. The controls that may be used for minimizing mercury emissions, such as activated carbon injection (ACI), baghouses, and scrubbers, can all be used on units that can burn either type of coal – regardless of heating value.

Sub-dividing the category according to the specified heating value is likely to cause confusion during implementation. For example, it is entirely possible that heating values for a number of sub-bituminous coals may fall above or below this break-point based on variability of heating values, mineral matter content, moisture content and the like. EPA has provided no clear standard by which to distinguish units "designed" to burn low-calorie coals, and those doing so by choice. Given the

[2] A review of EPA's data indicates that all of the units for which EPA has information that fall into the less than 8,300 Btu/lb category burn lignite coal.

difference in the proposed mercury MACT limits (1.2 lb/TBtu for the greater than 8,300 Btu/lb category, and 4 lb/TBtu for the less than 8,300 lb/TBtu category), there will be a significant incentive for many sources that burn sub-bituminous coals to classify themselves into the less than 8,300 Btu/lb sub-category, and thereby bypass available means of reducing their pollution.

The data do not support the proposed sub-categorization of coal-fired units. The chart below shows the mercury data (in lb/MMBtu) that were used in EPA's analysis. The bars in red are units in the "less than 8,300 Btu/lb" sub-category while all of the other data are for the greater than 8,300 Btu/lb sub-category. As shown below, there is no distinction between the two groups of data. In other words, the mercury data for the two sub-categories do not fall into two different or distinct populations. In fact, while the mercury emissions for the best performing lignite units were generally higher, EPA's floor analysis for the greater than 8,300 Btu/lb sub-category includes suggests that some best-performing units in that sub-category have mercury emissions greater than those used in the lignite sub-category – these are the blue bars in the chart below that are to the right of the red bars.



EPA asserts that in its ICR data set there were "no EGUs designed to burn a nonagglomerating virgin coal having a calorific value (moist, mineral matter-free basis) of 19,305 kJ/kg (8,300 Btu/lb) or less in an EGU with a height-to-depth ratio of 3.82 or greater among the top performing 12 percent of sources for Hg emissions." 76 Fed. Reg. 25037. The next sentences in the preamble demonstrate clearly that this is *not* a combustion technology driven subcategory, but rather one designed to accommodate EPA's conclusion that "emissions of Hg are different between these two subcategories." *Id.* Subcategorizing an industry *in order to preserve poor performance* – essentially EPA's asserted rationale – is an effort to sidestep the requirements of the statute, of the kind that the court invalidated in *NRDC v. EPA*, 489 F.3d at 1372-73. Units lacking pollution controls may have poor performance; the Agency cannot, however, create a subcategory for such units so as to prevent them from installing the necessary controls.

There is no technical justification for two subcategories defined by the 8300 Btu/lb characteristic; there is no difference between the combustion technologies and pollution-control options available to facilities burning the different grades of coal. Indeed, the industry experience is one in which the same or very similar pollution-control methods are employed for a variety of coal ranks, as environmental groups pointed out previously to the Agency in comments on the 2004 MACT standards proposal.[3] The data demonstrates that EGUs commonly burn a blend of coals, above and below the 8300 Btu/lb threshold. Moreover, Babcock and Wilcox, the manufacturer of various coal-fired power plant

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[3] Comprehensive Comments of Clean Air Task Force, *et al.*, "Proposed Emission Standards for Hazardous Air Pollutants; and in the Alternative, Proposed Standards of Performance for New and Existing Sources: Electric Utility Steam Generating Units," 69 Fed. Reg. 4652 (January 30, 2004) and Supplemental Notice, 69 Fed. Reg 12398 (March 16, 2004), Docket No. OAR-2002-0056, Chapter II at II-7 to II-9 (June 29, 2004).
Notably, EPA has not revived in the 2011 proposal the five unlawful coal-rank based subcategories it proposed in 2003/2004, however the 8300 Btu/lb is a thinly disguised coal-rank based subcategory which is beyond EPA's authority for the reasons stated not only herein but in the 2004 comments as well.

components, states that the majority of bituminous, sub-bituminous and lignite-fired conventional units are adaptable to most types of coal.[4]

EPA has presented no reason why the units in its less-than-8300 Btu/lb subcategory could not alter their choice of fuels, or otherwise reduce their emissions to match the performance of units burning higher-calorie coals. *See 42* U.S.C. § 7412(d)(2) (requiring EPA to set standards which include pollution reductions achievable, *inter alia,* through "process changes, [or] substitution of materials.").[5] Most coal plants (including their various sub-systems) are designed to accommodate coals of different properties. Even for conventional pulverized coal fired units, the fuel storage areas, flue handling systems, pulverizers, burners and the combustion air circuit, the firebox, as well as the later heat transfer surfaces such as the superhaters, reheaters, economizer, air preheaters are all designed to accommodate coals of different properties. Fluidized bed units are even more accommodating of a range of fuel properties. Similarly, the add-on pollution controls affecting hazardous air pollution depend mainly on the nature of exhaust gases from the unit; they can, accordingly, can be uniformly installed at coal-fired units of various designs. There are no significant design differences between coal-fired units to justify the proposed (or any other) sub-categories.

The sparse record underlying the Agency's rationale for the junk coal subcategory is suggests that the two coal subcategories are intended to preserve the ability to burn high-mercury coals, rather than truly distinguish sources based upon their "class, type, and size." This is unlawful, as well as arbitrary, and defeats the Act's directive to set standards that ensure that all sources will match the emission levels achieved by the best performers. 42 U.S.C. § 7412(d)(3). EPA therefore has

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[4] S.C. Stultz and J.B. Kitto, *Steam: its generation and use*, 40th edition, (Babcock and Wilcox, 1992), Chapter 13 at 13-3.

[5] In fact, the practice of fuel switching is very common in the utility industry, a practice that allows utilities to seek the less expensive coal. See comments of the Clean Energy Group on the utility MACT following the 2000 listing decision, in a letter to EPA dated September 6, 2002. Available on line at http://www.epa.gov/ttn/atw/combust/utiltox/ceg2epa9-6-02.doc (visited August 4, 2011).

not sufficiently justified its subcategory based on coals with less than 8300 Btu/lb heat input.

C. EPA's Coal Subcategories For New And Reconstructed Sources Are Not Justified To Any Extent

EPA does not simply propose its 8300 Btu/lb distinction as defining *existing* source subcategories; it also extends this for use in standard setting for *new sources.* EPA has *absolutely* no rationale for selecting this subcategory for *new* units. New EGUs can very easily be designed to provide optimum performance – and control – when firing all kinds of coal. Even in its extraordinarily weak 2003 proposal, EPA agreed that "the industry has some ability during the designing of new units to choose coal or oil that would minimize emissions of Hg and Ni and recognizes that the MACT standard for new units should, to the extent possible, encourage the industry in that direction."[6] But EPA now seems to believe that a unit combusting coal with heat values below 8300 Btu/lb and coal above 8300 Btu/lb are not "similar units," for the purpose of deriving MACT floors for new sources. These units are not just *similar,* they frequently are units of *exactly the same* design, with the only difference being that their owners/operators choose different fuel suppliers as they strive to minimize the cost of coal. Put differently, the same units can and do burn more than one type of coal. EPA has not justified the less than 8300 Btu/lb subcategory for new units. EPA should establish a single MACT limit for emissions from all new coal units.[7]

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[6] 69 Fed. Reg. at 4667.

[7] If EPA were to base its standards on a single coal-fired category, the floor for the new source would be the same as the floor for the best performing source of the combined category – i.e., the floor that is currently proposed (or as it should be properly modified based on other comments) for the greater than 8,300 Btu/lb sub-category.

D. Coal-fired EGUs are properly defined as those burning coal or coal refuse in any combination with other fuels in any amount

EPA requests comment on "whether the proposed rule should address how sources that change fuel input (e.g., burn solid waste or biomass), or otherwise take action that would change the source's applicability…must demonstrate continuous compliance with all applicable standards." 76 Fed. Reg. 25036. EPA has listed coal- and oil-fired EGUs. The statute simply describes "electric utility steam generating units," as those fueled by "fossil fuels" of no specified percentage. 42 U.S.C. §§ 7412(n)(1); 7412 (a)(8). The technical reality, as described above, is that EGUs designed to fire solid fossil fuels burn a mélange of coal types as well as other solid fuels including solid oil-derived fuels (petcoke), biomass, and other solid fuels. Any subcategorization must be based on design differences – specifically design differences which materially affect the availability of cleaner fuels, or other methods of reducing pollution. Where a plant voluntarily (or for economic reasons) chooses to burn a high-polluting fuel, that decision should not affect the standards applicable to the plant, with one exception: the Agency is obligated to distinguish between EGUs that are waste combusters (and thus subject to stricter standards governing waste combusters) from EGUs that are primarily fossil-fueled, and therefore must be included under this rule.

Accordingly, EPA has proposed rule definitions for the solid fuel subcategories. Coal fired units are defined as "electric utility steam generating unit meeting the definition of 'fossil fuel-fired' that burns coal or coal refuse either exclusively, in any combination together, or in any combination with other fuels in any amount." 76 Fed. Reg. 25122 (Proposed §63.10042 definitions). "Fossil fuel-fired," in turn, is defined as

> an [EGU] that is capable of combusting more than 73 MWe (250 million Btu/hr, MMBtu/hr) heat input (equivalent to 25 MWe output) of fossil fuels. To be 'capable of combusting' fossil fuels, an EGU would need to have these fuels allowed in their permits [sic] and have the appropriate fuel handling facilities on-site….In addition, fossil fuel-fired means any EGU that fired fossil fuels for more than 10.0 percent of the average annual heat input during the previous 3

calendar years or for more than 15.0 percent of the annual heat input during any one of those calendar years.

Id. at 25123. To the extent that an EGU that is capable of burning primarily coal or other solid fossil fuels to generate electricity, and also elects to co-fire biomass to meet some other statutory requirement, it must continue to meet the MACT limits for the subcategory in which it is listed. This is particularly important for biomass, as burning green wood produces more of various regulated HAPs than does burning coal. See figure 1 below.

Figure 1. Killen Coal Plant, OH: Significant increases in organic hazardous air pollutants when co-firing 5% biomass

TOXIC AIR POLLUTANT	Tons Per Year Coal Only	Tons Per Year Coal/biofuel
POM (reported as PAH)	0.02	0.20
Acetaldehyde	0.66	1.71
Benzene	1.51	6.89
Formaldehyde	0.28	5.98
Toluene	0.28	1.46

It would be unlawful for EPA to finalize a MACT subcategory that would *worsen* the HAP emissions profile of the EGU beyond what it would be absent the biomass burning.