May 20, 2010

OSHA Docket Office
Attention: Docket No. OSHA – 2009 – 0023
(Regulation Identifier Number 1218-AC41)
Technical Data Center
Room N – 2625
U.S. Department of Labor
200 Constitution Avenue, NW
Washington, DC 20210

Dear Madam/Sir:

The American Iron and Steel Institute (AISI) appreciates the opportunity to submit these comments for the Advance Notice of Proposed Rulemaking to develop a proposed standard for combustible dust.

AISI is comprised of 24 member companies, including integrated and electric furnace steelmakers, and 138 associate and affiliate members who are suppliers to or customers of the steel industry. AISI's member companies represent over 75 percent of both U.S. and North American steel capacity.

AISI commends OSHA for conducting this process of soliciting written comments as well as conducting several stakeholder meetings in advance of preparing a proposed rule on combustible dust. Along with many other industries, the steel industry could be substantially impacted, both in terms of work processes and finances, by a general industry combustible dust standard.

AISI members have a long history of managing and handling the dusts that are inherent to steelmaking processes. Dusts generated in steelmaking processes vary greatly in chemical composition, particle size and shape, moisture content, and other factors that determine whether, and to what degree, a particular dust will ignite and/or sustain combustion and deflagration.
Steelmaking dust is predominately comprised of iron and iron oxide, along with other metal and metal oxides used for alloying, and substances such as lime that are used in the steel making process. Dusts from the steelmaking process are subject to numerous environmental regulations regarding both air emissions and waste disposal. The costs of regulations and the industry’s commitment to sustainability have lead steelmakers over recent years to make substantial efforts at reduction, recycling, and to focus on other strategies to reduce the burden and cost of handling and disposing of steelmaking dusts.

AISI submits the following additional comments on a combustible dust standard and OSHA’s ANPR.

1. OSHA’s ANPR describes eight catastrophic dust explosions that have occurred in the United States over the past 15 years. The investigations of several of those explosions by the U.S. Chemical Safety Board have pointed to the fact that neither workers nor management recognized the presence of combustible dust or were sufficiently familiar with the potential for combustible dust explosions, and therefore did not take basic measures to reduce the risk of a major dust explosion. We believe that a national occupational health and safety standard could help to assure that companies and workers recognize the potential hazards of dust explosions and the steps to reduce the risk, and thus help to prevent such tragic events in the future.

2. At the same time, companies, including AISI members, could benefit from the regulatory certainty of a national standard, as compared to OSHA’s current regulatory and enforcement posture. Steel manufacturing is not one of the SIC/NAICS categories included in OSHA’s National Emphasis Program (NEP) on combustible dust, but some of our members have operations that have been inspected for combustible dust hazards. These companies have found it difficult at best to predict OSHA’s enforcement criteria, and to understand the basis for those
criteria, particularly with regard to criteria being enforced under the General Duty Clause. A comprehensive combustible dust standard will, we hope, provide a greater degree of certainty and predictability for companies seeking to meet OSHA’s enforcement requirements.

3. We believe that OSHA’s standard on combustible dust should be aimed at the hazard that OSHA discussed in the ANPR and which has triggered this rulemaking, that is, prevention of significant incidents involving accumulated highly explosive dust. In many industrial operations, steelmaking among them, dust is an inherent part of the production process. As noted above, the steel industry already expends considerable effort and costs in controlling and handling dust emissions. The standard must recognize that accumulations of non-explosible or mildly-explosible dusts in large buildings such as steel mills represent a minimal hazard. The focus of the standard should be on controlling the accumulation of combustible dust in quantities that could realistically result in a major (generally, secondary) dust explosions.

4. OSHA’s current enforcement practice communicated through the National Emphasis Program appears to be that any dust with a $K_{St} > 0$ measured in a 20-L vessel represents a dust explosion hazard. It is our understanding that OSHA has cited facilities with a $K_{St}$ below 3 bar-m/s.\(^1\) Such a criterion should not be used in any future OSHA regulation as this criterion is not consistent with the scientific literature, ASTM standards for testing combustible dusts, or NFPA standards related to dust explosion hazards. A 1992 study by Cashdollar at the U.S. Bureau of Mines and Chatrathi of Fike Corporation concluded that false positives can occur due to overdriving in the US Bureau of Mines 20-L vessel.\(^2\) False positives may result because materials that will not self-propagate a deflagration will burn due to the overdriving of the large

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\(^1\) OSHA often uses a 20-L vessel developed by the U.S. Bureau of Mines that provides $K_{St}$ values that are lower than those measured following the methodology of ASTM E1226.

pyrotechnic igniters in the small vessel. In that paper it was found that testing in a 20-L vessel indicated that a dust was explosible even though the dust was not explosible in a larger 1-m$^3$ vessel or in full scale mine tests. That paper concludes “However, the user should understand that these strong ignitors may produce overly conservative data in a 20-L chamber, and that further tests in a 1-m$^3$ chamber would be necessary for a more realistic hazard determination.” and that “the final determination should be made in a larger system, such as a 1-m$^3$ chamber”.

A more recent 2007 paper by Proust compared testing results in a modern 20-L vessel (consistent with the ASTM E1226) and a 1-m$^3$ vessel and again found that overdriving caused false positives in the 20-L vessel. The paper found that dust with a $K_{St}$ as high as 65 bar-m/s in the 20-L vessel was not actually explosible when tested in a 1-m$^3$ vessel and concluded that “The first point is that a significant proportion of dusts (5 over 21) explode, although weakly, in the 20 L sphere and not at all in the 1m$^3$ vessel. From the present analysis, a dust with Kst of 45 bar m/s in the 20 L sphere may not explode in the 1m$^3$ chamber.” The ASTM E1226-10 *Standard Test Method for Explosibility of Dust Clouds* also describes that overdriving can occur in the 20-L vessel and recommends testing in a larger chamber such as a 1-m$^3$ chamber to determine if a dust is actually explosible. NFPA 68 – 2007 *Standard on Explosion Protection by Deflagration Venting* also describes that overdriving can occur in the 20-L vessel and states “It can be impossible to unequivocally determine whether a dust is noncombustible in the case of small vessels [e.g., the 20 L (0.02 ft$^3$) vessel].” The ideal solution is to use large (10 kJ) igniters in larger [1 m$^3$ (35 ft$^3$)] vessels.

Thus OSHA’s current criterion of $K_{St} > 0$ in a 20-L vessel unnecessarily causes facilities to address combustible dust hazards when these dusts may not even be explosible.

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5. Additionally, we encourage OSHA to target a standard on dusts that constitute a realistic hazard for explosion (deflagration). As we noted earlier, the principal components of dust produced in steelmaking are generally of low risk of combustion. There is not a significant history of steel dust explosions, and in most cases dust in steel mills is non-explosible or at worst hard-to-ignite and weakly-explosible and represents a much lower risk than dust accumulations that have caused catastrophic dust explosions. We encourage OSHA to ensure that requirements for control measures in a dust standard are commensurate with the degree or level of explosibility of the dust. Obviously, it would not be good public policy, nor would it be legally permissible, for a final standard to end up forcing companies to adopt measures that go beyond those that are necessary and cost effective in preventing or significantly reducing the risk of combustible dust explosions. Current NFPA standards recognize that some materials may require a lower level of protection than others and typically allow the user to perform a hazard evaluation to determine the appropriate level of protection. Any OSHA regulation will have to allow facilities that handle mildly-explosible, hard-to-ignite dusts to use a lower level of protection. From a practical standpoint it would be difficult, and costly, to design explosion vents or suppression systems for equipment handling many low $K_{St}$ materials that do not pose a significant risk.

6. As we noted earlier, steelmakers are subject to extensive environmental regulation regarding both emission/collection and disposal of steelmaking dust. Over the past decade steelmakers have been developing and continue to develop new and innovative uses and recovery techniques for the dusts generated by steelmaking and processing. The continued emphasis on recycling and stewardship will continue to push the industry towards development of new technologies and further progress. It is important that an OSHA standard not hamper
those developments. In particular, we believe that a combustible dust standard should allow and provide maximum flexibility in the means by which companies may achieve the desired level of control against the hazard of accumulated combustible dust. In many cases, the most effective management and control of process dust is a combination of measures that do not necessarily fit into “hierarchy of controls” labels. For example, a recent article by two experts on dust explosion control noted that limestone added to explosible coal dust, a common technique not only in coal mines but also in steelmaking could be considered either an “administrative” control or an “inherent safety” control.\(^4\) We believe that it would be impossible for OSHA to anticipate the variety of processes even in the steel industry, much less all of the other industries potentially covered by a general standard on combustible dust, and therefore we encourage OSHA to provide flexibility to employers in how combustible dust control is achieved.

Further, any engineering requirements in an OSHA combustible dust standard would likely have implications with the steel industry’s compliance with environmental regulations. For example, requiring that all dust collectors be located out-of-doors and away from buildings could involve not only the cost of relocating the dust collectors and re-engineering the dust collection systems, but also have implications in terms of environmental permitting requirements. These costs would need to be taken into account in the rulemaking process if OSHA were to make this a requirement of the standard.

The above comments address issues of particular concern to AISI members. Many of the other issues raised by the ANPR have been well addressed by other commenters, both in response to the ANPR and at the stakeholder meetings that OSHA has conducted. For reasons similar to those given by other commenters, we would oppose incorporation of NFPA standards

into a standard, except perhaps as non-mandatory appendices with appropriate caveats regarding their application to specific situations. We note in that regard, however, that while most of our members’ operations come within the parameters of the current NFPA 484, other operations appear to fall under the general NFPA standard, NFPA 654. As OSHA noted in the ANPR, there are some significant differences between the two NFPA standards. We also agree with other commenters that, except in the most general way, OSHA’s Process Safety Management (PSM) standard, is not an appropriate model for a combustible dust standard. PSM is aimed at controlling sudden releases of flammable or toxic liquids and gasses, and therefore PSM has extensive and specific requirements to control or prevent any such release. Controlling a major combustible dust explosion does not involve similar requirements. As OSHA discussed in the ANPR, combustible dust explosions are less predictable than incidents involving flammable gases and liquids, and involve many more variables. A better model, we believe, is OSHA’s grain dust standard, which is more targeted to the risks of serious dust explosions in the industry operations covered by that standard.

Again, we commend OSHA for conducting this public comment process in advance of a proposed rule. We hope that OSHA will follow a similarly open and deliberative process as it proceeds with the rulemaking process. Thank you for your consideration of our comments. We would be pleased to respond to any questions regarding them.

Sincerely,

Thomas J. Gibson
President and Chief Executive Officer
American Iron and Steel Institute

Of Counsel: