



November 20, 2018

U.S. Chemical Safety Board
1750 Pennsylvania Avenue, NW Suite 910
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combustible dust@csb.gov

Re: CSB Releases Call to Action on Combustible Dust Hazards (<https://www.csb.gov/csb-releases-call-to-action-on-combustible-dust-hazards>, October 24, 2018)

To whom it may concern:

The Society of Chemical Manufacturers and Affiliates (SOCMA) is pleased to submit the following comments on the U.S. Chemical Safety Board's "Call to Action: Combustible Dust".

SOCMA is the only U.S.-based trade association solely dedicated to the specialty and fine chemical industry. Our members play an indispensable role in the global chemical supply chain, providing specialty chemicals to companies in markets ranging from aerospace and electronics to pharmaceuticals and agriculture.

CSB's initiative on combustible dust seeks information from entities involved in the management and control of combustible dust hazards. SOCMA members have a significant interest and vast experience with combustible dust hazards and appreciate the opportunity to submit comments.

The comments and recommendations on the pages that follow were developed in 2010 in response to an advance notice of proposed rulemaking by the U.S. Occupational Safety and Health Administration on combustible dust.¹ SOCMA believes this information, gathered from the collective input of SOCMA's membership, continues to have strong relevance for the purposes of CSB's current initiative on combustible dust. As such, these comments have been provided in the full state in which they were originally submitted to OSHA. If you have any questions regarding these comments, please do not hesitate to contact me at (571) 348-5122 or at rothsteinj@socma.com.

Respectfully submitted,

¹ Docket No. OSHA-H022K-2009-0023, RIN 1218-AC41 (Federal Register / Vol. 74, No. 202 / Wednesday, October 21, 2009).



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General Comments

SOCMA members have always been supportive of preventing and mitigating combustible dust hazards from the United States workplace, and for over the past forty years, we have spent millions of dollars and dedicated a significant amount of time to evaluating potential chemical hazards, communicating hazard information and protecting workers.

Combustible dust hazards encompass a wide array of materials, industries and processes, which calls for an equally wide range of solutions, mitigation techniques, and outreach. Since SOCMA members produce a wide range of chemicals they are also experienced with many types of combustible dusts. Combustible dust explosions are not exclusive to any one industry; therefore, there is no “one size fits all” solution to prevent the imperfect storm of a combustible dust explosion.

Conversely, if a rigid approach to combustible dust is adopted, like the NFPA standards; it will have a disproportionate economic impact on small business chemical manufacturers, particularly companies that are already struggling in these unstable economic times. If OSHA were to adopt NFPA standards wholesale, SOCMA member companies of all sizes would have to expend great sums of time, money, and resources to make the changes that would inevitably be necessary to comply with these prescriptive standards, expenditures that might not be the most efficient or effective way to reduce combustible dust hazards. NFPA standards are difficult to use because of conflicting definitions, varying requirements and secondary references. SOCMA members do support the key concepts and principles of these standards, and we encourage OSHA to use them as a reference in designing a combustible dust rule.

SOCMA members propose a consistent, non-prescriptive, performance-based approach to regulating combustible dust hazards. Such a standard would specify:

- Required outputs, rather than inputs, and thus provides a degree of freedom to affected companies to determine how they will achieve compliance; and
- Risk identification, assessment and control processes, rather than specific solutions.

This approach suits the combustible dust challenges faced by OSHA and industry given the multiple risk sources and multiple risk controls.

Any combustible dust standard will impose costs on regulated workplaces, but a majority of these burdens can be mitigated if the most at-risk entities are aware of the hazards and proper compliance assistance is provided. OSHA should thus continue working closely with trade associations through alliances to examine the economic impacts and compliance gaps associated with combustible dust solutions – indeed, this should be one of OSHA’s top priorities. We suggest utilizing SOCMA’s proven outreach strategies, via Web sites, electronic tools, Webinar presentations, flash videos, a dedicated web page, such as SOCMA’s ChemAlliance, email newsletters and regional workshops.

Response to Specific OSHA Advanced Notice of Proposed Rulemaking Questions

In the October 12, 2009 advance notice of proposed rulemaking, OSHA requested input on 69 specific sets of questions. Based on input from SOCMA member companies surveyed, we provide the following responses for OSHA’s consideration. Note that SOCMA is not providing responses to every question asked by OSHA – some questions are not relevant to SOCMA’s membership, or SOCMA simply may not have responsive information at this preliminary stage of this rulemaking.

Definition of Combustible Dust

1. What business are you in? What NAICS industry or industries are you in?

SOCMA members are primarily involved in small batch chemical manufacturing, which includes the following NAICS industries: Chemical manufacturing (325000), Pharmaceutical and Medicine manufacturing (323410) and Basic Organic Chemical manufacturing (3251880).

2. How many employees do you have? How many are production employees? How many employees work in areas where combustible dusts are present? What types of jobs do they perform?

SOCMA members employ anywhere from 50,000+ workers to less than twenty. A majority of SOCMA members meet the applicable Small Business Administration standard of employing less than 500 employees. For small batch chemical manufacturers, chemical production employees account for a large percentage (roughly half) of all hired SOCMA member employees, depending on what chemical is produced and the process employed.

A surprisingly small amount of employees are exposed to combustible dusts work areas relative to all SOCMA member employees. Exposed employees range from fifteen percent to less than two percent of the total workforce. Most of the employees exposed to combustible dust hazards are loading, unloading, sampling, packaging, and processing chemicals, and in performing maintenance.

3. What is the area of your facility? What percentage of this area has combustible dusts normally present? What percentage is subject to possible fugitive dust accumulations?

The area of facility space per SOCMA member ranges from upwards of 200 acres to as little as 5,000 square feet, but the combustible dust areas of concern typically are less than ten percent of the total square footage of the facility.

4. What type or types of combustible dusts are present?

Since batch manufacturers produce a wide range of chemicals, SOCMA member companies are also experienced in dealing with many types of combustible dusts, including specialty chemical powders, organic and inorganic powders, acid powders, resin dust, polyethylene wax dust, pharmaceutical raw material dust, etc.

5. Would you expect other firms in your industry to have similar combustible dusts hazards or are the products or processes that generate combustible dust in your facility unusual for your industry? Why?

Yes, SOCMA members would expect that most companies that produce the same products/chemicals have the same processes.

6. Do you determine whether a dust is considered a combustible dust by reference to data, testing, or some other means? Please explain.

SOCMA members make determinations about the combustibility of dust through a combination of testing and supplied or referenced research data. Pre-existing research data can often supplement or accompany testing.

7. What additional tests do you conduct to determine the level of combustibility of a particular dust?

Most SOCMA member companies leverage all known data sources when possible, and some will perform additional ASTM tests (e.g. E-2019, E-1226, E-1515) as necessary to the design strategy.

8. Do you have any dusts that you assume to be combustible, and, thus, preclude the need or expense of testing? If so, please indicate what type of dust.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

9. Certain definitions, in particular those definitions based on particle size alone, would not cover some materials that can present an explosion hazard in certain situations. Accordingly, identify any dusts that can explode that would not be included in your definition. Would your definition include some dusts for which explosions are very rare or unknown? If so, which ones?

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Hazard Recognition

10. How did you become aware that you had combustible dust present in your facility?

SOCMA member companies are aware of combustible dust hazards through historical product testing data, job hazard assessments, process hazard analyses and revalidations, consumer product information, MSDS training, OSHA's Combustible Dust NEP, NFPA standards, and electric classification drawings.

11. Who is responsible for determining if a dust is combustible? What expertise do they have?

For typical SOCMA members, personnel experienced in regulatory affairs, product safety and compliance are responsible for determining whether a dust hazard is present. These professionals have science backgrounds and advanced degrees in chemical engineering or chemistry. Training in hazard communication, product safety, and product stewardship is very common among individuals making these determinations.

12. How do you determine if dust is combustible? Do you use published data, and if so, from what source? Do you sample dust for laboratory testing, and if so, how often? Do you rely on labels or data sheets, including MSDSs, developed by others? Do suppliers provide you with information related to combustible dust? Please explain.

SOCMA members use published data, sample dust testing, and MSDSs, if available.

13. To what extent do the local code authorities, insurance representatives, or other outside experts determine the presence of combustible dust in your facility?

A large majority of SOCMA member companies do not use local code authorities, insurance representatives, or other outside experts to determine the presence of combustible dust.

For some SOCMA members, insurance representatives annually review plant operations but the responsibility of identifying potential combustible dust hazards is typically left to the company itself. In some instances, OSHA and insurance representatives have determined that dusts at a facility are combustible.

Hazard Assessment

14. Do you conduct assessments of combustible dust hazards? How often? What assessment method do you use? Describe the information you use in performing the assessment, as well as the information the assessment yields and how you use this information.

Most SOCMA companies conduct process hazard analyses (PHAs), job safety analyses (JSAs) and layer of protection analyses (LOPAs), coupled with strict adherence to housekeeping standards, to assess and mitigate combustible dust hazards. Depending on the analysis performed, the frequency ranges from annually to every three to five years.

15. On whom do you rely for technical assistance when performing the assessment? In-house staff, local/State authorities, insurance representatives, or consultants?

Over eighty percent of SOCMA members surveyed perform hazard assessments in house with periodic assistance from contractors. Very few members rely on insurance reps for technical assistance.

16. How do you decide when outside expertise or assistance is necessary? How do you assess the capability of outside experts?

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

17. Are your employees involved in the hazard assessment? Does their involvement improve the assessment? Does their involvement improve their understanding of the hazard and its mitigation?

Unionized and non-unionized SOCMA member employees are involved in combustible dust hazard assessments. SOCMA member companies recognize that employees can improve hazard assessments and contribute to mitigation techniques.

Hazard Communication and Training

18. Do the MSDSs you develop or use identify the risks associated with combustible dust hazards? Do they list mitigation measures? Are you aware of MSDSs that should identify combustible dust as a hazard and do not? If so, please explain.

Many MSDSs identify combustible dust hazards, but many of the MSDSs that SOCMA members use do not, and probably should.

19. Do you communicate information on the risks of, and controls for, combustible dust hazards to your employees as a part of your hazard communication program?

Yes, the great majority of SOCMA member companies communicate combustible dust information as part of their hazard communication program.

20. Do you train your employees on the hazards of combustible dust and its mitigation? Do you also provide refresher training? What is covered in each type of training that you provide? How many of your employees receive each type of training that you provide? How many hours of training is provided and at what frequency (on hire, annually, as needed)? Who provides the training? What are their qualifications? Do you use standardized training materials (such as films, books, and computer classes)?

When employees receive combustible dust training, it is typically coupled with an emphasis on housekeeping standards. SOCMA member companies generally provide annual or bi-annual refresher courses and train new hires under the existing hazard communication training program, utilizing films, books and computer classes. Initial and periodic refreshers are common, using OSHA alerts/fact sheets or industry accident information (e.g., CSB videos). Production supervisors, EHS managers or consultants typically provide the training.

21. Do you have any means of determining if employees understand the training? Do you have any means of determining if employees are applying the training? If so, describe these means.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

Consensus, Industry, and Insurance Standards

22. Do you follow the provisions in NFPA standards for combustible dust? If so, which standards? Is this use voluntary, or based on mandates by local authorities, insurance carriers, or other entities? Do you have any difficulty in using the NFPA standards because of conflicting definitions, varying requirements, secondary references to other standards, or any other reason? If so, describe these difficulties.

SOCMA members feel that OSHA should not adopt the prescriptive NFPA standards in their entirety. Most SOCMA members follow key portions of the NFPA standards, but very few apply the prescriptive standards to all phases of the manufacturing, processing, blending, repackaging, and handling of combustible particulate solids or hybrid mixtures.

Some members incorporate portions of the standards into their company's practices, while most utilize the applicable NFPA standards voluntarily – as a reference. A majority of SOCMA members believe that NFPA standards are sometimes difficult to use because of conflicting definitions, varying requirements and cross-references to other standards. (The cascading references from one standard to another, and from the latter to yet another, makes the NFPA combustible dust standards particularly “Byzantine” in the words of one user.) On the other hand, SOCMA members believe they do benefit from the key concepts and principles of NFPA standards.

23. Do you use FM Global Property Loss Prevention Data Sheet 7-76, Prevention and Mitigation of Combustible Dust Explosions and Fires, as an aid in determining how to mitigate the hazards of combustible dust? Is this use voluntary or mandated by your insurance carrier?

A very small percentage of SOCMA members use the FM Global Property Loss Prevention Data Sheet 7-76 as an aid to mitigating hazards of combustible dust, and of them, most use the document as a reference. A handful of members are mandated by their insurance providers to adhere to the FM Global Property Loss Prevention Data Sheet 7-76, but this is rare.

24. Are there any other standards or guides you use to address the hazards of combustible dust? If so, please indicate which ones, or describe them.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

State and Local Codes

25. Does the fire or building code (State, local, or other) in your area specifically address the hazards of combustible dust? If so, how?

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

26. Has your facility been inspected by State or local authorities? Is this a regular occurrence? If so, at what frequency? Were these inspections initiated by the authorities, or did you take the initiative to contact them? Did the inspections include combustible dust hazards? Did the inspection officials have expertise on combustible dust hazards? What action did you take as a result of State or local inspections?

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

27. Do you know if State or local enforcement efforts have been effective in controlling combustible dust hazards? If you have information on any studies of this issue other than the CSB's study (for example, studies conducted by insurance organizations, code authorities, trade associations, consultants, or unions), please provide information on them.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

Engineering Controls

28. Do your facilities or equipment have any of the following primary engineering controls to mitigate combustible dust hazards? If so, describe in detail where they are installed and how they function to mitigate combustible dust hazards.

- a. Features to prevent escape of dust into unwanted areas.
 - *Almost all of the SOCMA members surveyed follow this engineering control to mitigate combustible dust hazards.*
- b. Features to prevent the accumulation of dust on surfaces.
 - *Two thirds of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- c. Oxygen concentration reduction.
 - *One third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- d. Dilution with noncombustible dust.
 - *This engineering control is not routinely practiced by the SOCMA members surveyed.*
- e. Foreign material (such as tramp metal) separation devices.
 - *Less than one third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- f. Monitoring and alarms for abnormal conditions.
 - *Half of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- g. Automatic interlocks, shutoffs, or overflow systems.
 - *Less than half of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- h. Manual emergency controls.
 - *A little more than half of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- i. Lightning protection systems.
 - *Less than one third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*
- j. Features to mitigate the hazards of process heating systems.

- *Less than one third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*

k. Features to mitigate the hazards of comfort heating systems.

- *Less than one third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*

l. Features to mitigate the hazards of hot surfaces.

- *Roughly one third of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*

m. Class II electrical equipment and wiring.

- *More than half of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*

n. Other mitigation features or engineering controls designed or built into your facility or processing equipment to prevent the occurrence of fires or explosions.

Class 1 electrical wiring, dust collection system on packaging machines, housekeeping standards and the hot work program are all additional features that SOCMA members use to prevent combustible dust fires and explosions.

29. Do your facilities or equipment have any of the following secondary engineering controls to mitigate combustible dust hazards? If so, please describe in detail where they are installed and how they function to help mitigate combustible dust hazards.

a. Air-material separators (dust collection systems)

- *Almost all of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

b. Segregation with physical barriers.

- *Less than half of all SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

c. Separation by distance.

- *Less than one third of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

d. Fire-resistant construction.

- *About half of the SOCMA members surveyed responded that they follow this engineering control to mitigate combustible dust hazards.*

e. Deflagration pressure containment.

- *Less than one third of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

f. Deflagration suppression systems.

- *Less than ten percent of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

g. Automatic fire suppression systems.

- *About half of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

h. Manual fire suppression equipment.

- *About half of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

i. Deflagration venting.

- *About half of the SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

j. Dust retention and flame arresting devices.

- *Less than a quarter of SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

k. Relief valves or devices.

- *About three fourths of SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

l. Abort gates or dampers.

- *Not routinely practiced by any SOCMA member surveyed.*

m. Isolation devices to preclude deflagration propagation.

- *Not routinely practiced by a majority of SOCMA members surveyed.*

n. Evacuation alarm systems.

- *Almost all SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

o. Fire, heat, smoke, flame, or spark/ember detection systems.

- *Roughly half of SOCMA members surveyed responded that they follow this secondary engineering control to mitigate combustible dust hazards.*

p. Other mitigation features or engineering controls designed or built into your facility or processing equipment to limit deaths, injuries, or damage after a fire or explosion has occurred.

No others identified at this time.

30. Do you feel that secondary engineering controls should be in the preferred hierarchy of controls after administrative controls? Why or why not? Please describe incidents where secondary engineering controls were effective or ineffective.

SOCMA members support inclusion of secondary engineering controls in the preferred hierarchy of controls, but the order of that hierarchy would require further discussion.

31. How much did each fixed feature cost to install? Are there any special maintenance or operating costs associated with these features (such as energy costs, waste disposal costs, maintenance activities such as clean up)? Are there any other routine costs associated with these measures?

Highly specialized machines and modifications, such as explosion suppression systems and explosion proof electrical equipment, are very costly. Costs vary by the features and sizes of these controls, but some examples of the cost of installing fixed features include: dust collection and scrubbers (\$200k), small baghouses (range from \$50k to 100k), smaller dust collection systems (often \$15k each), and deflagration panels on solid conveying system baghouses (\$40k). Prescribing these measures could be particularly burdensome for small businesses like SOCMA member companies.

Aside from the initial cost, the maintenance associated with the equipment is yet another additional cost. Since inspection and testing vary, costs cannot be estimated easily.

32. How did you decide which of these features to provide in your facility? Were these features installed during the initial construction of the facility, or retrofitted at a later time?

For some SOCMA member facilities, the features were initially installed during construction, so the costs associated with the equipment are hard for them to identify. By the same token, retrofitting later can only cost more, because of both inflation and the inherent efficiencies of integral, initial installation.

Administrative Controls

33. Does your facility have any methods that prevent or limit the escape of dust? Please describe these methods.

SOCMA members mentioned the following administrative methods they utilize to prevent or limit dust: regular seal inspections and maintenance, closed charging systems, limiting the quantities handled at one time, and operator training on the handlings of bags containing powders.

34. Do you have a program or policy specifically for cleaning surfaces to remove accumulated fugitive dust? What surfaces does this program cover? What is the frequency with which you remove dust from surfaces? Do you inspect hidden and non-work areas, such as ventilation systems, product or input storage areas, concealed spaces, areas above suspended ceilings, beams, and ledges, for fugitive dust accumulation?

The number of SOCMA member facilities and the variety of dust programs and policies prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

35. Do you have criteria or measures for what amount or level of fugitive dust accumulation is tolerable (such as a specific depth over a given area, inability to discern underlying color)? Please describe these criteria and measures.

The number of SOCMA member facilities and the variety of their criteria and measures prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

36. Do you use cleaning methods that preclude dust disbursement? Which methods do you use, and under what conditions? What methods do you prohibit, and why?

The number of SOCMA member facilities and the variety of their cleaning methods prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

37. Do workers' assignments, in whole or in part, involve cleaning dust from surfaces? How many workers perform this task, and how many hours per week do they spend on dust removal? Can the cleaning be done with minimal interruption of the facilities' operations?

Yes, SOCMA companies adhere to strict housekeeping standards that include employees cleaning dust from surfaces.

38. Do you implement ignition controls for any of the following ignition sources for areas where combustible dust may be present? If so, indicate which sources and provide details. Did you consult with your operational employees in developing these programs or policies? How do you assure that your programs or policies are followed by all relevant parties?

- a. Control of static electricity.
- b. Use of cartridge-actuated tools.
- c. Control of open flames and sparks (including cutting, welding, grinding, chipping).
- d. Control of smoking.
- e. Restrictions for hot surfaces.
- f. Use of powered industrial trucks (EX or DX designation).

Most SOCMA member companies implement the above ignition controls. They generally consult with operational employees in developing these programs and policies.

39. Do you have a program in place for the maintenance and testing of fixed facilities, equipment, structures, or systems? If so, please describe the program.

Yes, all surveyed SOCMA companies have prevention maintenance programs, including testing instruments, building fire prevention and air systems, servicing emergency device and safety equipment, interlocks, mechanical integrity of PCE, and inspections of relief devices (including blow out panels).

40. Do you have or use any personal protective equipment specific to combustible dust hazards? If so, please describe the equipment, and the reasons for its use.

The number of SOCMA member facilities and the variety of personal protective equipment specific to combustible dust hazards prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

41. Are any of your administrative or work practice programs or policies written? If so, please provide a copy of these written documents.

Yes, these policies are generally in written form, depending on the company.

Emergency Response

42. Do you provide facility information to industrial fire brigades or other emergency responders for the purpose of assisting their efforts to respond to fires or explosions? If so, please describe the information you provide to them.

Under the Emergency Planning and Community Right-to-Know Act (EPCRA), also known as Title III of the Superfund Amendments and Reauthorization Act (SARA), SOCMA members provide emergency responders with important information about chemical hazards:

- *SARA requires that each covered facility provide the local emergency planning committee (LEPC) with necessary information for developing and implementing local emergency plans.²*
- *Every facility required to maintain or prepare an MSDS for a hazardous chemical is required to be submit these MSDSs (or a list of the relevant chemicals) to the LEPC and the local fire department.³*
- *The same facilities must also file a a "Tier I" chemical inventory form with the LEPC and the local fire department containing:*
 - *An estimate (in ranges) of the maximum amount of hazardous chemicals (in aggregate form) at the facility at any time during the preceding calendar year.*
 - *An estimate (in ranges) of the average daily amount of hazardous chemicals at the facility during the preceding calendar year.*
 - *The general location of hazardous chemicals in each category.⁴*

OSHA should evaluate the scope of these requirements before entertaining any additional information-sharing requirements.

43. Do you provide training to employees, industrial fire brigades, or other emergency responders on the hazards of fighting fires in combustible dust-producing facilities? If so, respond to the following questions, and provide details and explanation. Do you train these groups on combustible dust hazards and their mitigation? Do you also provide refresher training? What is covered in this training? How many people receive this training? How many hours of training is provided and at what frequency (on hire, annually, as needed)? Who provides the training? What are their qualifications? Do you use standardized training materials (such as films, books, and computer classes)? Do you have any means of determining if attendees understand the training? Do you have any means of determining if attendees apply the training

² 42 USC § 11003.

³ 42 USC § 11021

⁴ 42 USC § 11022(d). Upon the request of these local authorities, facilities must supply this information on a chemical-by-chemical basis. *Id.* § 11022(e).

after they receive it? Please describe any instances where the training provided affected the outcome of an incident.

Most SOCMA member companies conduct annual hazards drills/training with emergency responders, employees, industrial fire brigades and the local fire department. Dust hazards as well as any other issues with the facility are discussed during the drills/training. Refresher training is conducted on an as-needed basis (i.e., when a new hazard is identified, or in response to CSB reports).

Investigation of Incidents

44. Have you had any combustible-dust-related fires, explosions, or near misses? If so, describe these incidents in detail, and indicate what changes were implemented to prevent a reoccurrence. How do you define or characterize a near miss?

Some SOCMA members have experienced small dust-related fires but very few explosions. For example, some small fires have resulted while changing water reactive dust bags, from bearing malfunctions, or from static sparks from on a plastic hopper to a filling machine.

“Near misses” are often defined as any circumstance that has the potential to cause a negative consequence. Some members then capture the near miss information into a variety of metrics to mitigate the hazard. “Near misses” are internally investigated and proper measures are taken to prevent the reoccurrence.

45. Are combustible-dust-related fires, explosions, or near misses investigated? If so, indicate how thoroughly, who performs them, and what professional qualifications they have. Do you document investigation results? If so, please provide examples of such documentation.

See answer to Question #44.

46. Does such a fire, explosion, or near miss cause a new hazard assessment to be conducted? Do these incidents cause you to review your engineering or administrative controls?

Depending on the cause (of the fire, explosion, or near miss), a hazard assessment is conducted by most members along with a review of engineering and administrative controls.

Regulatory Approach

47. OSHA recognizes that the risk from combustible dust hazards varies with the type of material involved and the conditions present, the particular processes used at a facility, and the number of workers exposed. These hazards exist in facilities ranging from a woodworking shop with one employee to a large manufacturing plant with thousands of workers. Should OSHA scale its requirements to be more or less restrictive depending on either the size of, or type of dust present in, the facility? How should this scaling be done (i.e., how should the provisions of a standard be applied to different facilities)? Are there situations or conditions that should limit the provisions that apply? If so, please explain.

OSHA should scale its requirements to be significantly less restrictive than the NFPA standards. An overwhelming majority of SOCMA members commented that the scale should be based on:

1. *the volume of the dust handled and produced;*
2. *the characteristics of the material processed (i.e., the number and types of measures required should be proportional to risk, as assessed by available engineering data and measured material physical characteristics such as concentration levels, Minimum Ignition Energy (MIE), etc.); and*
3. *Size of the facility (the volume of requirements and associated costs should be less for smaller facilities).*

48. Given the various definitions in the consensus standards, how should OSHA define combustible dust – by minimum particle size, without regard for particle size, or should the definition vary for the type of dust? Provide the technical basis for your response.

The definition of combustible dust should vary depending on the type of dust, starting with the MIE and the potential for detonation, then factoring in physical characteristics and minimum ignition temperatures.

49. Data indicates that mineral dusts (such as silicates, sulphates, nitrates, carbonates, phosphates, cement, salt, gypsum, sand, and limestone) are not explosible. Should OSHA exclude mineral dusts or any other dust from coverage? If so, which dusts? Please provide the technical data substantiating the lack of explosibility.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

50. Some dusts (such as wood dust) are widely understood to be combustible, and are explosible under a wide range of conditions. Should OSHA consider certain dusts explosible under any conditions, thereby precluding the need for testing? Alternatively, should OSHA permit employers to make this determination? If so, for which types of dust? Please explain your responses.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

51. The NFPA combustible-dust-related standards have some similar provisions, but also have some provisions that vary for different types of dusts. Other NFPA standards have provisions that apply only to specific dusts. Should an OSHA standard cover different types of dusts separately, together, or in some other manner? Please explain your response.

Most SOCMA members suggest that OSHA should cover different types of dusts separately. The NFPA format for categorizing specific dusts is the most familiar for most SOCMA members.

52. The approach suggested by the CSB and others contains many of the elements in OSHA's Process Safety Management (PSM) Standard. Should an OSHA standard take an approach similar to the PSM Standard, e.g., by requiring the development and implementation of a site-specific plan tailored to the facility and hazards in question? Please provide a rationale for your response.

A substantial number of SOCMA members noted that if the approach taken by the PSM rule were applied, it would be more burdensome than warranted to reduce the hazard at their site.

53. NFPA 654 contains a provision for combustible dust hazard assessment, which helps refine the actions required for adequate safety under the specific conditions present in a facility. OSHA recognizes that this

approach may not be necessary for all types and sizes of facilities. For example, a small furniture shop may be able to safely operate under a fixed set of requirements for the well-understood hazards of wood dust. Should every provision of an OSHA combustible dust standard be addressed in a hazard assessment, or just provisions involving engineering controls? Should the hazard assessment vary according to the size or type of facility? Please explain your response.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

54. It has been suggested that OSHA incorporate NFPA standards by reference to address combustible dust hazards. The Agency is concerned with a number of issues regarding this approach. These concerns include, but are not limited to:

- a. The scope of NFPA standards exceeding OSHA's mandate to protect only employees.
- b. The multitude of mandatory primary references, secondary references, and other subordinate references in each NFPA standard that could result in an unnecessary burden on employers.
- c. The differences between the various NFPA combustible-dust-related standards.
- d. The frequent updating of standards by NFPA, making the OSHA standard outdated.
- e. The limited availability of older editions of NFPA standards.
- f. The difficulty involved in readily updating the consensus standards referenced in an OSHA combustible dust standard to the current or most recent edition of the consensus standards.
- g. The fact that OSHA cannot legally update NFPA or other consensus standards used in its rules by referring to the "current" or "most recent" edition of the consensus standards.

How do you think the Agency should make use of NFPA standards in a prospective OSHA standard? If the NFPA standards are not directly incorporated by reference into the OSHA standard, would it be appropriate for the OSHA standard to reference NFPA standards as compliance alternatives (e.g., if an employer complies with the referenced NFPA standard applicable to an operation, OSHA would deem the employer to be in compliance with the applicable provision of the OSHA standard)?

SOCMA opposes incorporating NFPA standards into OSHA regulations (and thus making them independently enforceable) for all the reasons OSHA identifies.

Also, SOCMA members understand NFPA standards can be viewed as a source of RAGAGEP (Recognized And Generally Accepted Good Engineering Practices) under the PSM standard, 29 CFR § 1910.119(d)(3)(ii), as well as EPA's RMP rule. Thus, NFPA standards involving combustible dust are already at least potentially applicable to any facility subject to PSM, depending upon the standard, the facility and the exercise of good engineering judgment. This fact suggests that OSHA need not act to incorporate any NFPA combustible standards into a combustible dust rule (or, at a minimum, that it should exempt from such incorporated requirements any facility regulated under the PSM rule).

SOCMA members recommend that OSHA use NFPA standards as a reference source for any future combustible dust, codifying only the key components of the NFPA standards into a flexible, performance-based rule.

55. Outreach efforts (both public and private), employer awareness, and OSHA's enforcement have increased in response to various combustible dust incidents over the last decade. As a result, many employers continue to upgrade their facilities and update their operating procedures to prevent and control combustible dust hazards. Would an OSHA combustible dust standard increase employee safety

beyond the level already attained through current Federal efforts, State and local requirements, and voluntary standards? What approach would most effectively increase the safety of employees? Please provide a rationale for your response.

Many SOCMA members sense that an OSHA combustible dust standard may slightly increase employee safety beyond the government level already attained. A new standard is least likely to have a significant impact at sites that already perform evaluations and implement controls for combustible dusts.

SOCMA submits that, of facilities outside the chemical industry that experienced major incidents, a majority of companies recklessly defied basic safety rules or had no idea they had a dust problem. As part of developing any new combustible dust standard, OSHA therefore ought to devote significant effort to determining how it would alert regulated entities outside the chemical industry to the fact that they were subject to the standard.

If OSHA reaches across to such less regulated industries to ensure their compliance with a standard, then OSHA will be able to channel its energy to those most at risk of an explosion or fire.

56. In 2003, OSHA concluded in its regulatory review that no significant changes were needed to OSHA's standard on Grain handling facilities at that time. Are any revisions needed to the portions of this standard that address fires and explosions? Are revisions to this standard necessary to harmonize it with the treatment of other dusts? Should the existing provisions of the standard that address fires and explosions be covered under a combustible dust rule? If OSHA retained the standard and issued a combustible dust standard that applied to other facilities and processes, would portions of your plant be covered by both standards? If so, would this present a problem? Please explain your response.

No comment at this time.

57. OSHA anticipates that administrative and work practice controls would be included in a combustible dust standard. For instance, several OSHA standards already address the accumulation of fugitive combustible dust, but do not address the escape of dust. Some ignition sources are covered under current OSHA standards (such as electrical and powered industrial trucks), but other, easily controlled ignition sources, would likely be addressed in a prospective OSHA combustible dust standard (such as open flames, sparks, hot surfaces, static electricity, tools, and smoking). Engineering controls can be more costly and take longer to implement than administrative controls. Should an OSHA combustible dust standard have requirements for engineering controls to control fugitive combustible dust? Which engineering controls should or should not be required, and under what circumstances? Should OSHA require retrofitting of engineering controls, and if so, which controls? What time period should OSHA allow for retrofitting? What are the costs associated with retrofitting these controls?

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

58. Workers are often in the best position to understand how processes work and the characteristics of the materials involved. Workers also may be in the best position to see how variations in procedures or equipment can affect their safety. Should operational employees participate in the development of engineering and administrative controls? Will this participation improve their safety? Please explain your response.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

59. Facilities, processes, and materials are subject to change over time. These changes can affect potential hazards, and, thereby, the means used to mitigate those hazards. If these changes are not examined to determine if corresponding changes in protection or prevention are necessary, worker safety could be decreased. Should change management be a component of an OSHA standard? Why or why not?

It already is. The PSM rule requires management of change – see 29 C.F.R. § 1910.119(l). Under the rule, SOCMA companies must establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures, and to facilities that affect a covered process.⁵ Those procedures must assure that the following considerations are addressed prior to any change: 1) technical basis for the proposed change; 2) impact of change on safety and health; 3) modifications to operating procedures; 4) necessary time period for the change; and 5) authorization requirements for the proposed change.⁶ Accordingly, OSHA should not include change management in any combustible dust standard (or, at least, it should exempt PSM-regulated facilities from the requirement).

60. A fire, explosion, or near-miss, could indicate that improvements are necessary to provide an adequate level of employee safety. Improvements may depend on the incident's severity or consequences. Should investigations of fires or explosions be a part of an OSHA combustible dust standard? Should a fire or explosion be classified for reporting purposes in terms of its severity, effect, size, or duration? If so, provide details. Should investigations and reporting of near-misses be a part of an OSHA standard? Please explain your response.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

61. Should an OSHA combustible dust standard address the hazards of fighting fires in combustible-dust-producing facilities? If so, should the standard address fire fighting by designated employees, an employer's industrial fire brigade, or other emergency responders? In your response, provide details on hazards specific to fighting fires in or near combustible dust.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

Economic Impacts and Benefits

62. What are the potential economic impacts associated with the promulgation of a standard specific to the hazards of combustible dust? Describe these impacts in terms of benefits from the reduction of incidents and injuries; effects on revenue and profit; and any other relevant impact measure. If you have any examples of estimates of the costs of controlling combustible dust hazards, please provide them.

The economic impacts of a combustible dust standard on SOCMA members companies could be staggering. The high costs associated with testing and engineering controls to reduce the hazards would

⁵ 29 C.F.R. § 1910.119(L)(1).

⁶ 29 C.F.R. § 1910.119(L)(2).

have a detrimental impact on SOCMA member small businesses if such controls were mandated. (For example, material testing costs about \$5000 per substance) Most SOCMA members produce or handle hundreds of chemicals per year. If they are compelled to perform testing, testing costs could soar to well over 200k in some instances. For a small businesses grossing less than ten million dollars in annual revenues (nearly half of all SOCMA members), the costs could force companies into bankruptcy. If the results were negative, testing on all chemicals would be an expensive proposition to determine that no combustible hazard exists.

SOCMA members suggest that some industries would dramatically benefit from increased company awareness that will lead to increased safety for the employees. A standard that allows flexibility to manage risk (i.e., is performance based) would have a lesser economic impact.

63. What changes, if any, in market conditions would reasonably be expected to result from issuing a standard on combustible dust? Describe any changes in market structure or concentration, and any effects on services, that would reasonably be expected from issuing such a standard.

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

64. Would a comprehensive OSHA standard on combustible dust reduce fire and explosion hazards? How would an OSHA standard address any noncompliance problem (such as, noncompliance with the housekeeping standard or the GDC)?

The number of SOCMA member facilities and the variety of their business practices prevent SOCMA from being able to provide an answer to this question that would be broadly representative of the membership.

Impacts on Small Entities

65. How many, and what type of small firms, or other small entities, have combustible dust hazards, and what percentage of their industry (NAICS code) do these entities comprise?

Over eighty-seven percent of SOCMA members are small businesses as defined by U.S. Small Business Administration (SBA), with nearly half (47%) grossing less than ten million dollars in annual revenues and about one third (31%) earning less than four million dollars per year. Small business SOCMA members are primarily involved in small batch chemical manufacturing, which can include Chemical Manufacturing (325000), Pharmaceutical and Medicine Manufacturing (323410) and Basic Organic Chemical Mfg (3251880).

66. How, and to what extent, would small entities in your industry be affected by an OSHA standard regulating combustible dust? Do special circumstances exist that make controlling combustible dust more difficult or more costly for small entities than for large entities? Describe these circumstances.

For a large majority of SOCMA member small businesses, obtaining funding/capital to implement engineering controls could create a significant economic hardship. It would require a thorough facility assessment and possibly the use of a professional consultant. The high cost of equipment would be a greater relative burden for smaller companies.

Compliance Assistance

67. Are you familiar with any of the following guidance and outreach products OSHA has produced? Which of these products have you used as an aid in determining what to do about combustible dust in your facility?

a. Safety and Health Information Bulletin--Combustible Dust in Industry: Preventing and Mitigating the Effects of Fire and Explosions.

- *90% of SOCMA members responding to the survey were familiar with the Safety and Health Information Bulletins.*

b. Web site Safety and Health Topics Page - Combustible Dust.

- *80% of SOCMA members responding to the survey went online to find information on Combustible Dust.*

c. Hazard Alert Fact Sheet - Combustible Dust Explosions.

- *80% of SOCMA members responding to the survey read the Combustible Dust Hazard Alert Fact Sheets.*

d. Poster - Combustible Dust –

- *Only half of SOCMA members responding to the survey get use out of Combustible Dust posters.*

68. What types of materials, products, or outreach would assist you and employees in addressing combustible dust hazards? Do small businesses have special needs with respect to the form or content of such materials? Would dust-specific or industry-specific materials be useful?

The SOCMA members surveyed would appreciate:

- *Information on the control of dusts*
- *Informative (SOCMA) Webinars*
- *OSHA guidance documents*
- *Access to dust testing capabilities (if possible)*
- *Federal dust data tables for the use by industry*
- *Videos and training materials (similar to the CSB videos) that companies can adapt to their own specific issues*
- *Development of an OSHA Expert Advisor*

[see <http://www.osha.gov/dts/osta/oshasoft/index.html#eTools>]

69. Do you prefer paper publications such as booklets, fact sheets, and quick cards, or electronic tools such as OSHA safety and health topics pages and eTools?

Fact sheets are the most used and preferred OSHA publication among SOCMA members. Quick cards were not as popular, but electronic tools rated high as the most anticipated and potentially useful.