6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 261, and 266

[EPA-HQ-OLEM-2018-0830; FRL-9991-43-OLEM]

RIN 2050-AG93

Modernizing Ignitable Liquids Determinations

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA or the Agency) is proposing to update the regulations for the identification of ignitable hazardous waste under the Resource Conservation and Recovery Act (RCRA) and to modernize the RCRA test methods that currently require the use of mercury thermometers. These proposed revisions would provide greater clarity to hazardous waste identification, provide flexibility in testing requirements, improve environmental compliance, and, thereby, enhance protection of human health and the environment.

DATES: Comments must be received on or before *[insert 60 days after publication in the* Federal Register*]*

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-HQ-OLEM-2018-0830, at http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be

accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

FOR FURTHER INFORMATION CONTACT: Daniel Fagnant, Office of Land and Emergency Management (5304P), Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460; telephone number 703-308-0319; email address: fagnant.daniel@epa.gov or Melissa Kaps, Office of Land and Emergency Management (5304P), Environmental Protection Agency, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460; telephone number 703-308-6787; email address: kaps.melissa@epa.gov

SUPPLEMENTARY INFORMATION: The information presented in this preamble is organized as follows:

I. General Information

A. Does this action apply to me?

The proposed rule to update the test methods for determining if a liquid waste is ignitable under the ignitability characteristic may potentially affect any entity (e.g., generator, laboratory) that currently conducts flash point testing using either SW-846 Method 1010A (Pensky-Martens) or Method 1020B (Setaflash). The rule may also affect any entity (e.g., generator, laboratory, combustor) that uses SW-846 air sampling and stack emissions Methods 0010, 0011, 0020, 0023A, or 0051. EPA does not expect the other parts of this proposed action (i.e., changes to aqueous alcohol exclusion, addition of sampling guidelines for multiphase mixtures, and technical edits) to affect any entity because they do not create new requirements or change existing requirements.

The universe of facilities affected by the proposed updates to the ignitability test methods and SW-846 air sampling and stack emissions methods includes: (1) commercial laboratories, (2) EPA laboratories, and (3) state laboratories. EPA identified 217 unique commercial laboratories that conduct ignitability testing under either Method 1010A or 1020. EPA identified an additional 18 commercial laboratories accredited to conduct any of the air sampling and stack emissions methods that would be updated under this proposed rule, for a total of 235 commercial labs affected by the rule. These 235 total laboratories are part of 177 unique firms, including

several large commercial laboratories with multiple locations. EPA estimates that the total number of laboratories, including 20 state and nine federal laboratories, potentially affected by this rule is 264. The analysis used to identify the potential universe for this proposed rule can be found in EPA's *Regulatory Impact Analysis of the Modernization of Ignitable Liquid Determination Rule*, which is in the docket.

This discussion is not intended to be exhaustive but rather provides a guide for readers regarding entities likely to be regulated by this action. This discussion lists the types of entities that EPA is now aware could potentially be regulated by this action. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the FOR FURTHER INFORMATION CONTACT section.

B. What action is the agency taking?

First, EPA proposes to update the flash point test methods required for determining if a liquid waste is an ignitable hazardous waste. Second, EPA is proposing to codify existing guidance regarding the regulatory exclusion in the ignitable characteristic for aqueous liquids containing alcohols and is requesting comment on whether additional changes may be warranted. Third, EPA is proposing to codify existing sampling guidance regarding waste mixtures having multiple phases when determining whether a waste exhibits the ignitability characteristic. Fourth, EPA is proposing to update cross references to Department of Transportation regulations and to remove obsolete information. Finally, EPA is proposing to provide alternatives to the use of mercury thermometers in the air sampling and stack emissions methods in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods* (SW-846). Adding the option of using non-mercury thermometers in place of mercury thermometers would provide the regulated community with increased flexibility in their implementation of these required test methods. The

use of alternatives to mercury thermometers is consistent with previous Agency actions and helps achieve the Agency's goal of minimizing the use of mercury.

The EPA is proposing and requesting comment on revisions to modernize the ignitability flash point test methods (Methods 1010A and 1020B) and air sampling and stack emissions methods (Methods 0010, 0011, 0020, 0023A, and 0051) to allow the use of non-mercury thermometers. The Agency is also proposing to update the ignitability regulation (40 CFR 261.21) by codifying guidance for aqueous alcohol solutions and multiphase mixtures, as well as making technical corrections. EPA expects this proposed rulemaking to improve hazardous waste identification, reduce testing costs, improve laboratory safety, and improve environmental compliance, thereby enhancing protection of human health and the environment.

C. What is the agency's authority for taking this action?

The authority to propose this rule can be found in sections 1002, 1006, 2002, 3001-3009, 3013, and 3017 of the Solid Waste Disposal Act (SWDA) of 1970, as amended by the Resource Conservation and Recovery Act (RCRA) of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), 42 U.S.C. 6901, 6905, 6912, 6921-6929, 6934, and 6938.

D. What are the incremental costs and benefits of this action?

EPA prepared an economic analysis of the potential costs and benefits associated with this proposed action. The *Regulatory Impact Analysis of the Modernization of Ignitable Liquid Determinations Rule* is available in the docket. The proposed rule will modify SW-846 test methods while also retaining the current procedures to provide entities increased flexibility. For the purpose of the analysis, EPA assumes that every facility that currently conducts flash point testing: (1) is compliant with the current test methods, (2) will adopt the updated test methods if cost effective, and (3) will continue to conduct flash point testing. The analysis indicates that the

rule, as proposed, is projected to result in annualized cost savings of about $78,500 to $477,000 (based on a discount rate of 7 percent). The net present value of costs over 20 years is estimated to be a cost savings of $832,000 to $5 million (seven percent discount rate). EPA's analysis shows qualitative benefits to human health and the environment through the reduced use of mercury thermometers.

II. Background

A. What is a hazardous waste?

Subtitle C of RCRA and its implementing regulations establish a cradle-to-grave regulatory management scheme for certain solid wastes that qualify as hazardous wastes. RCRA defines solid waste as "any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material * * *." (See RCRA 1004(27), 42 U.S.C. 6903(27).) EPA has further defined the term solid waste for purposes of its RCRA hazardous waste regulations (40 CFR 261.2). To be considered a hazardous waste, a material first must be classified as a solid waste. Under EPA's regulations, generators of solid waste are required to determine whether their wastes are hazardous wastes (40 CFR 262.11). A solid waste is a hazardous waste if it exhibits any of the four characteristics of ignitability, corrosivity, reactivity, or toxicity (40 CFR 261.20-.24), or is a listed waste (40 CFR 261.30-.33). Listed wastes include wastes from non-specific sources, such as spent solvents; by-products from specific industries; and discarded, unused commercial chemical products.

B. What is the hazardous waste characteristic of ignitability?

The characteristic of ignitability (40 CFR 261.21) identifies solid waste as hazardous based on the properties of the waste that give it the potential to cause harm to human health or

the environment through direct or indirect fire hazard, including contributing to or causing landfill fires. Waste that is identified as hazardous pursuant to 40 CFR 261.21 has the EPA Hazardous Waste Number of D001. Ignitable hazardous waste (D001) is regulated to minimize its opportunity to cause or contribute to fires during routine waste management activities. Solid wastes that are regulated as ignitable hazardous waste include: 1) certain liquids with flash points below 60 °C (140 °F); 2) non-liquid substances that are capable, under specified conditions, of causing fire through friction, absorption of moisture, or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that they create a hazard; 3) ignitable compressed gases; and 4) oxidizers.

C. What is the regulatory history of the ignitability characteristic?

The ignitability characteristic was originally proposed in 1978 (43 FR 58945) with an objective of identifying wastes that present a fire hazard due to being ignitable under routine waste disposal and storage conditions. The ignitability characteristic was finalized in 1980 when EPA promulgated the first phase of regulations under Subtitle C of RCRA to protect human health and the environment from the improper management of hazardous waste (45 FR 33066, May 19, 1980). These regulations included 40 CFR Part 261, which in part, defined the ignitability characteristic and incorporated by reference ASTM[1] D 93-79 (Pensky-Martens) and ASTM D 3278-78 (Setaflash) as the required tests for ignitable liquid hazardous waste determinations. In a 1981 revision, EPA revised SW-846 Method 1010 to allow the use of D 93-79 or D 93-80 (46 FR 35246, July 7, 1981).

ASTM standards D 3278-78, D 93-79, and D 93-80 were the methods available for flash point testing at the time of the 1980 and 1981 rulemakings. Since that time, ASTM International

[1] ASTM International (ASTM) is a nonprofit organization, made up of producers, users, consumers, government, and academia, that develops and publishes consensus-based standards (https://www.astm.org/).

(ASTM) has updated D 93 and D 3278 multiple times to improve the standards and incorporate new technology. EPA previously proposed to update the flash point test methods for ignitability in the 2002 proposed Methods Innovation Rule (67 FR 66252, Oct 30, 2002) by replacing ASTM standard D 3278-78 with D 3278-96 and ASTM standards D 93-79 and D 93-80 with D 93-99c. In that proposed rule, EPA also requested comment on whether D 93-00 should instead replace D 93-79 and D 93-80. The public raised concerns that the sampling procedures of the proposed versions of D 93 may lead to a loss of flammable volatile constituents from a sample due to greater headspace in the sampling container. The Agency made the decision to not revise flash point testing when the Methods Innovation Rule was finalized in 2005, agreeing with public comments that EPA further study the changes in flash point testing standards (70 FR 34550, June 14, 2005).

EPA later made corrections to the ignitability characteristic to replace obsolete references to DOT regulations related to definitions of ignitable compressed gases and oxidizers (see July 14, 2006 Federal Register; 71 FR 40254). That final rule amended §261.21 by revising paragraphs (a)(3) and (a)(4) and adding notes 1 through 4 to the end of the section. No change was made to §261.21(a)(1). The current language in §261.21(a)(1) is substantively the same as it was in 1980.

D. What is a flash point and how is it measured?

The Kirk-Othmer Encyclopedia of Chemical Technology defines a flash point as the lowest temperature, corrected to normal atmospheric pressure (101.3kPa), at which the application of an ignition source causes the vapors of a liquid specimen to ignite under the specific conditions of the test (Solvents. Kirk-Othmer Encyclopedia of Chemical Technology. 1–40). A flash point can be measured using a specifically designed apparatus operated under

specified procedures. In general, these procedures involve incrementally heating a liquid sample to a specified temperature in an open or closed cup and then exposing the vapors above the liquid to a flame or electric spark ignition source. The person performing the test looks for a flash caused by the vapor phase igniting; if no flash is observed, the sample is heated to a higher temperature and the experiment is repeated. When used for RCRA regulatory purposes, the test is repeated until the temperature surpasses 60 °C (140 °F) using specified procedures and apparatuses to ensure that accurate and precise waste determinations are being made.

E. What flash point test methods does EPA currently require?

EPA currently requires the use of one of two flash point test methods when making an ignitability hazardous waste determination for liquid wastes, if generator knowledge is not used. (For more information on the use of generator knowledge, see Agency guidance, *Waste Analysis at Facilities that Generate, Treat, Store and Dispose of Hazardous Wastes*, available in the docket.) The required test methods to determine the method-defined parameter for the flash point of ignitable hazardous waste are SW-846 Methods 1010A and 1020B, which are listed in 40 CFR §260.11 and required by 40 CFR §261.21(a)(1). EPA requires the use of a specific method to obtain a method-defined parameter when the particular procedures and/or equipment of that method are necessary to achieve the property measurement required by regulation. Therefore, to determine whether a liquid waste is ignitable hazardous waste under RCRA (i.e., has a flash point less than 60 °C (140 °F)), its flash point must be assessed according to the procedures and instrumentation set forth in Methods 1010A or 1020B. While other methods may exist that can measure the flash point of a liquid waste, only the test methods set forth in Methods 1010A or 1020B may be used for determining whether a liquid waste is ignitable under 40 CFR §261.21(a)(1). Because using Method 1010A or 1020B yields results that are driven by the

particular technical specifications in those methods, the measures and outcomes from these methods are known as method-defined parameters, and their required use in section §261.21 can only be amended through a regulatory effort.

Method 1010A is a test method for flash point measurement using a procedure and instrumentation commonly referred to as the Pensky-Martens method. Method 1010A, or the Pensky-Martens method, incorporates by reference ASTM standards D 93-79 and D 93-80. The last two digits at the end of these ASTM standards indicate the year of publication for these standards (i.e., 1979 and 1980, respectively). ASTM standard D 93 is an actively maintained standard under the ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants. The most recent update to the D 93 standard is D 93-16a, which was published in 2016.

Alternatively, SW-846 Method 1020B can be used for determining the hazardous waste characteristic of ignitability for liquids. Method 1020B is a test method for flash point measurement using the Setaflash, or small-scale closed-cup, device and method. Method 1020B incorporates by reference ASTM standard D 3278-78, which is maintained by the ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications. The last update to this ASTM standard was in 1996. However, the standard was reaffirmed in 2011 as ASTM D 3278-96(2011).

In making an ignitable liquid hazardous waste determination, either the Pensky-Martens or the Setaflash method may be used for most wastes. The Pensky-Martens test is more appropriate for liquids that are nonhomogenous, form films, have high viscosities, or are slurries because it uses an instrument that can mechanically mix wastes. The Setaflash method, however, provides a practical advantage of reduced sample size and, therefore, reduced lab waste generation when compared to the Pensky-Martens method. Generators and laboratories should

choose to use the test method that is most suitable to their needs.

F. What is the aqueous alcohol exclusion?

The ignitability characteristic in §261.21(a)(1) excludes "aqueous solution[s] containing less than 24 percent alcohol by volume" from the scope of liquids subject to §261.21. When EPA originally proposed the ignitability characteristic in 1978, the proposed rule did not contain an exclusion for aqueous alcohols (43 FR 58945). Commenters on the 1978 proposed rule "argued that the ignitability characteristic improperly includes many liquid wastes such as wine, latex paint and other water borne coatings which contain low concentrations of volatile organics such as alcohol and will consequently exhibit flash points below 100 °F but will not sustain combustion because of the high percentage of water present." (Background Document for the Characteristic of Ignitability, US EPA, May 2, 1980, page 38.) In response, EPA modified the ignitability characteristic in the final rule with "an exclusion similiar [sic] to that prescribed by DOT [Department of Transportation] and exempt from the ignitability characteristic aqueous solutions with alcohol concentrations of less than 24 percent by volume. This exclusion will remove from the ignitability characteristic such things as wine and latex paint which flash at less than 100 °F but will not sustain combustion." (ibid., 39.) Thus, the 1980 final rule codified the following text in the definition of ignitability at §261.21(a)(1): "It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60 °C (140 °F)."[2] (45 FR 33121; May 19, 1980.)

EPA later clarified the alcohol exclusion in several ways. In the preamble to a later rulemaking (55 FR 22543, June 1, 1990), EPA stated that "the term alcohol [in §261.21(a)(1)]

[2] Note that even if this waste stream falls within the scope of the aqueous alcohol exclusion and, thus, would not be regulated as an ignitable hazardous waste, this waste stream could still be regulated as a hazardous waste if it exhibits other hazardous characteristics or is listed. In addition, once a waste stream no longer meets the requirements of the exclusion or is likely to not meet the requirements during normal management (e.g., the water or alcohol content changed), the waste would be subject to regulation under the ignitability characteristic.

refers to any alcohol or combination of alcohols" and noted that "[i]f the alcohol has been used for solvent properties and is one of the alcohols specified in EPA Hazardous Waste No. F003 or F005, the waste must be coded with these Hazardous Waste Numbers." In addition, in 1992, the EPA clarified that the "alcohol exclusion in 40 CFR §261.21(a)(1), however, is not limited to those wastes mentioned in the May 19, 1980, Federal Register. It applies to all aqueous solutions containing less than 24 percent alcohol, even if additional non-alcoholic components are present." (EPA Monthly Hotline Report, EPA530-R-92-014g, July 1992, page 3.)[3] In that clarification, EPA stated that the "alcohol exclusion for the ignitability characteristic was adopted from the Department of Transportation's (DOT) definition of "combustible liquids" in 49 CFR §173.115(b). The alcohol exclusion in 49 CFR §173.115(b)(2)(ii) applies to aqueous solutions containing 24 percent or less alcohol by volume which contain no less than 50 percent water. Since EPA originally intended to be consistent with DOT regulations when promulgating the alcohol exclusion in §261.21(a)(1), the 50 percent water stipulation may be applied to the ignitability characteristic."[4] Thus, for the purpose of the ignitability characteristic in §261.21(a)(1), EPA stated that "aqueous" means a "solution continuing at least 50 percent water by weight." (ibid., 4.)

G. Why consider alternatives to mercury thermometers in test methods?

Today, EPA is proposing to remove the requirement to use mercury thermometers in several EPA analytical methods by revising the method or by adding modern alternative methods that may be used. Because of its unique properties, elemental mercury has been used in many

[3] A copy of this Question and Answer has been placed into the docket for this proposal. A version is also available at www.epa.gov/rcraonline, RCRA Online Number 13548.

[4] In developing this proposed rule, EPA reviewed how the ignitability characteristic's aqueous alcohol exclusion related to the alcohol exclusion under DOT's Hazardous Materials Regulations (HMR). A summary of DOT's HMR's exemption of alcoholic beverages and aqueous solutions of alcohol has been placed into the docket for reference.

applications, including thermometers, fluorescent light bulbs, and some electrical switches. However, mercury from these devices can enter the environment through breakage or spills during use and during recycling or disposal. Mercury is a potent neurotoxin with a variety of well-documented negative health effects. For more information on the negative health effects of mercury exposure, see https://www.epa.gov/mercury/health-effects-exposures-mercury#self.

Government agencies continue to phase out the use of mercury devices, including efforts by EPA (see 76 FR 2056, January 12, 2011; 77 FR 2456, January 18, 2012; and the September 30, 2008 memorandum, Phasing Out Mercury Filled Thermometers[5]), the National Institute of Standards and Technology (NIST) (see *User-Friendly Guidance on the Replacement of Mercury Thermometers*[6]), and the Agency for Toxic Substances and Disease Registry (ATSDR) (see report on *Children's Exposure to Elemental Mercury: A National Review of Exposure Events*[7]). Organizations, including ASTM International (see ASTM and the Mercury Initiative[8]) and the United Nations Environment Programme (UNEP) (see Minamata Convention[9]), have also worked to phase out mercury thermometer usage. EPA maintains information on efforts to reduce mercury exposures and to address mercury pollution in the environment at https://www.epa.gov/mercury. In the majority of uses, mercury thermometers can be replaced with safer, technically appropriate, readily available non-mercury temperature measurement devices (Ripple and Strouse J. ASTM International 2005).

III. Proposed Revisions to the Ignitability Characteristic Flash Point Test Methods

A. Why is EPA proposing new flash point test methods for ignitable liquids?

[5] This memorandum is available at https://www.epa.gov/mercury/2008-memo-requiring-all-epa-labs-phase-out-use-mercury-filled-thermometers and in the docket.
[6] This document is available at https://www.epa.gov/sites/production/files/2015-10/documents/nistuserfriendly guide.pdf and in the docket.
[7] This report is available at https://www.atsdr.cdc.gov/mercury/mercury_report.html and in the docket.
[8] See https://www.astm.org/SNEWS/SO_2008/mercury_so08.html and the docket.
[9] See http://www.mercuryconvention.org/.

Although the flash point test methods currently required by §261.21(a)(1) provide accurate determinations of whether a liquid waste is characteristic for ignitability, these methods were published about 40 years ago, and newer technology is now available. As explained in Section II.E. in this notice, SW-846 Method 1010A currently incorporates by reference ASTM standards D 93-79 and D 93-80, which are known as the Pensky-Martens method. SW-846 Method 1020B currently incorporates by reference ASTM standard D 3278-78, otherwise known as the Setaflash method. These test methods represented technology and best practices developed in 1978, 1979, and 1980. Since then, the ASTM committees that maintain these standards have updated these test methods to incorporate modernized technology and practices, but the RCRA regulations still require the use of the 1978, 1979, and 1980 versions.

Due to the scientific and technological advances over the last few decades, these methods have become outdated and their use presents several challenges to the regulated community. For instance, these standards require mercury thermometers, which are being phased out because of the environmental health and safety concerns of mercury. The Agency's mercury thermometer requirements have become more difficult to meet as organizations, such as NIST (NIST, 2011), discontinue calibration services for mercury thermometers; consensus-based bodies, such as ASTM (ASTM, 2008), phase out mercury thermometers from their standards; and instrument manufacturers phase out mercury thermometers from commercially available equipment. As part of its efforts to reduce mercury usage and release, and in the interest of providing the regulated community with modern, readily available options for compliance, EPA has already revised SW-846 methods that require the use of mercury thermometers to allow for the use of non-mercury-containing temperature measuring devices (77 FR 2456, Jan 18, 2012; 79 FR 11228, Feb 27, 2014).

The decreased use of mercury thermometers and new technology in modern instrumentation combined with the decreased availability of calibration services limit commercially available flash point devices that meet the current EPA testing requirements for ignitable waste. First, the flash point standards required by EPA use reference materials that, as EPA understands, are no longer commercially available as certified reference materials, such as para-xylene for D 3278-78. Second, new technologies, such as electric spark ignition sources in place of flame ignition sources, offer improved lab safety and are available in modern instruments. Third, the Agency believes that new instruments may not be able to increase temperature at the specified rate (temperature ramping rate) in SW-846 Method 1020B.

EPA is proposing to revise the existing required Flash Point Test Methods 1010A and 1020B by adding modern consensus-based standards that reflect the improvements and modernization of flash point testing that has occurred since 1978 to the methods currently required by 261.21(a). EPA understands that many generators and laboratories already have instrumentation capable of modern flash point testing. Therefore, the proposed update adds the flexibility of using modern test methods, provides the potential for cost savings, and enhances the protection of human health and the environment while providing equivalent results (See Section III.D. for information on how the proposed test methods are equivalent to the currently required test methods).

B. What test method is EPA proposing to add to Method 1010A?

EPA is proposing to revise 40 CFR 261.21 and update Method 1010A to Method 1010B to incorporate by reference ASTM standard D 8175-18 as an alternative to ASTM standards D 93-79 and D 93-80 (Pensky-Martens method) (see Table 1). The D 8175-18 standard is maintained by the ASTM Committee D34 on Waste Management, with whom the Agency

worked to modify the existing D 93-16 standard for waste testing. The creation of the D 8175-18 standard utilized the existing knowledge and practices of the flash point testing community to develop a standard specifically suited for flash point testing of waste matrices.

The Agency initially considered proposing to incorporate by reference ASTM standard D 93-16 as a required flash point test method. ASTM standard D 93, has been updated numerous times between 1980 and 2017. The 1979, 1980, 2016, and 2017 versions of D 93 all achieve the same fundamental measurement; the newest versions incorporate newer technology, provide more detailed procedures, and include quality control measures, such as instrument verification using certified reference materials. However, the D 93-16 standard was written for the testing of petroleum products, and EPA, after reviewing the standard, had concerns that the standard was not ideally suited for flash point testing of waste forms. The matrices of discarded chemicals, lab wastes, liquids from emergency response, free products, and other wastes that might make up a waste mixture are often more complex and varied than petroleum products. The Agency is concerned about the appropriateness of some aspects of the D 93-16 sampling procedures when applied to waste analysis. The D 93-16 standards were developed primarily to test the flash point of products while RCRA testing requirements are often for more complex mixtures. For example, heating a sample to lower the viscosity before placing it in the closed cup device for measurement of the flash point may produce results that are not representative when testing waste mixtures with relatively small concentrations of volatile components that easily ignite and readily evaporate at elevated temperatures. The Agency notes that the public raised similar concerns in comments regarding the Agency's proposal to incorporate D 93-99c by reference as part of the Methods Innovation Rule (See comments by the American Chemistry Council, EPA Docket Number EPA-HQ-RCRA-2002-0025). The D 93-16 standard is also designed to measure

petroleum products in a temperature range from 40 °C to 370 °C. As the regulatory criteria for flash point of ignitable liquids is 60 °C and below, EPA worked with ASTM to modify the D 93-16 test procedure to measure flash points of waste matrices in a narrower temperature range and closer to room temperature. The lower but narrower temperature range required for RCRA ignitability testing also allows for a slower temperature ramp rate in the method. The Agency notes that it is possible that the lowest temperature of the apparatus is significantly higher than the actual flash point of the sample. Some liquids such as gasoline, pentane, hexane, natural gas condensate, drip oil, etc. have flash points below -20 C, the lower limit of the small scale closed cup test method. Conditions can exceed the fire point (see ASTM D92) and a significant enlargement of the test flame is observed. In such situations, it is to be concluded that the flash point is below the range of the tester and hence below 60 C.

Table 1: Summary of Current and Proposed SW-846 Flash Point Tests and the ASTM Standards Incorporated by Reference

ASTM Standard Incorporated by Reference	Common Name	Status	EPA SW-846 Method Number	Publication Year
D 93-79	Pensky-Martens	Current flash point test method used in §261.21(a)(1)	1010A	1979
D 93-80	Pensky-Martens	Current flash point test method used in §261.21(a)(1)	1010A	1980
D 8175-18	Pensky-Martens	Proposed modern, alternative flash point test method	1010B	2018
D 3278-78	Setaflash, Small Scale Closed Cup	Current flash point test method used in §261.21(a)(1)	1020B	1978
D 8174-18	Setaflash, Small Scale Closed Cup	Proposed modern, alternative flash point test method	1020C	2018

C. What test method is EPA proposing to add to Method 1020B?

EPA similarly worked with ASTM to modify the current version of the small-scale closed-cup flash point test. EPA is proposing to revise §261.21 and update Method 1020B to Method 1020C, incorporating by reference the resulting ASTM standard D 8174-18 as an alternative to ASTM standard D 3278-78 (Setaflash method) (see Table 1). The D 8174-18 standard is an updated version of the D 3828-16a standard that has been modified to be more appropriate for waste testing. EPA first considered incorporating by reference D 3278-96(2011), which is the most current version of the standard that is in Method 1020B. However, this standard does not use the most modern technology available for Setaflash closed-cup testing, having been last updated in 1996 (and last reaffirmed in 2011). As ASTM has multiple standards for closed-cup flash point testing, EPA also considered the suitability of ASTM standards D 7236-16 and D 3828-16a. Due to EPA's understanding that D 3828 is a preferred method in the analytical community, EPA focused on ASTM standard D 3828-16a as a new test for ignitable liquids. After further review of ASTM D 3828-16a standard, the Agency identified concerns with the sampling procedures similar to the Agency's concerns with D 93-16 as stated in Section III.B. The sampling procedures in 3828-16a are refined and optimized for petroleum products. Waste matrices can be mixtures of a wide variety of chemical compounds with varying physical properties and may present sampling challenges not often found in petroleum products. As a result, EPA worked with ASTM to adapt the standard to waste samples.

Additionally, EPA was interested in a testing procedure that minimized sampling requirements and waste generation. The use of a finite flash method would require that samples with unknown flash point temperatures be measured in a series of tests until a flash was detected.

Each test in the series would require a new sample be placed in the tester, increasing the amount of sample required for analysis and waste generated by testing. Therefore, EPA worked with ASTM to develop a modified version of ASTM standard D 3828-16a that also includes a non-mandatory ramp test. This ramp test procedure (found in the appendix of D 8174-18) can be used to determine an estimated flash point when working with an unknown sample. The estimated flash point can then be used to perform the finite flash test procedure, limiting the total number of tests needed when the expected flash point of a sample is not known.

D. How are the proposed test methods equivalent to the currently required test methods?

Technical changes between the currently required SW-846 Methods 1010A and 1020B and the proposed test methods include the allowance for an automatic method with electronic flash point detection, the option to use a flame ignition source or an electric ignition source, and use of non-mercury temperature devices. The changes in instrumentation that have occurred over time as new technology was developed present opportunities for improvements to a method but also may affect precision, accuracy, or bias of an instrument or method. In the process of adapting these new technologies, ASTM and other organizations have conducted a number of studies to verify that these technological changes present equivalent testing results, as discussed below.

The use of automated instrumentation for flash point testing has been a widely accepted practice for decades. In 1992, ASTM completed a round robin study (see Research Report S15-1008 in docket) using ASTM standards D 92 and D 93 to determine the precision and accuracy of automatic and manual flash point instruments. This round robin study found no statistical difference between the reproducibility variances of automatic and manual Pensky-Martens flash point methods.

The use of electric ignition sources in flash point testing improves lab safety. The Energy Institute funded a round robin study to determine the precision for ASTM D 3828-9 using both gas and electric igniters (see Energy Institute Research Report, August 15, 2010 in docket). The round robin study found that while there was bias between the electric and gas ignition sources, the bias was small relative to the repeatability of the method. ASTM took this information into consideration and decided to publish a combined precision applicable to both gas and electric ignitors for ASTM standard D 3828.

Both of the new ASTM standards that will be incorporated by reference, D 8175-18 and D 8174-18, allow for the use of temperature measuring devices that are either digital or liquid-in-glass. The digital temperature measuring devices and liquid-in-glass thermometers must meet the specifications listed in Annex A1 and A2 of D 8175-18 and Annex A4 of D 8174-18. These performance-based specifications may allow for the use of mercury-containing thermometers but do not require them. The performance requirements of temperature measurement devices are set by manufacturers to meet certification standards set by NIST and other standards organizations. The use of calibrated and certified non-mercury temperature measurement devices in flash point testing is expected to provide equivalent results (See User Friendly Guidance on the Replacement of Mercury Thermometers from NIST/EPA in docket).

The changes in instrumentation to incorporate new technology are already reflected in the modern versions of the ASTM standards that are currently required by EPA for flash point testing pursuant to 261.21 (e.g., modern versions of D 93-79, such as D 93-16a, have electric ignition sources). The repeatability and reproducibility of the modern standards are similar to that of the standards currently required by EPA[10]. This similarity, for the purposes of flash point

[10] Repeatability and Reproducibility are terms defined by ASTM and other organizations. Repeatability is precision

testing, indicates that the results from either test method should be similar.

For example, ASTM standard D 93-80 lists a repeatability of 2 °C and a reproducibility of 3.5 °C for flash point measurements of 104 °C and under. For modern versions of D 93, repeatability and reproducibility are dependent upon the flash point temperature measured. Therefore, using EPA's regulatory value for flash point of 60 °C in the temperature-dependent equation given by ASTM D 93-16, repeatability is 1.74 °C and reproducibility is 4.26 °C. ASTM standard D 3278-78 gives a repeatability of 1.7 °C and a reproducibility of 3.3 °C. D 3278-96(11), which is the modern version of D 3278-78, lists a repeatability of 1.7 °C and a reproducibility of 3.3 °C. The similar values for repeatability and reproducibility in the modern standards and the 1978 to 1980 standards that EPA currently requires shows that the accuracy of these methods has remained relatively unchanged despite the adoption of new technology into the standard as discussed above.

These precision and accuracy statements from ASTM are based on testing relatively pure reference chemicals. To confirm these results for more complex waste forms (e.g., those consisting of multiple components and multiple phases), a single lab study was conducted. In ASTM standards D 8175-18 and D 8174-18, a single lab study using simulated waste matrices determined repeatability for these standards. The simulated waste matrices were single phases consisting of an equal volume mixture of xylenes and 1-butanol, a mixture (by volume) of 60% 1-butanol and 40% n-decane, a mixture (by volume) of 70% n-decane and 30% n-undecane, and a mixture (by volume) of 10% acetone and 90% n-heptane. A multiphase mixture (by volume) of 50% diesel, 47.5% water, and 2.5% acetone was also studied (see D 8175-18 and D 8174-18 in

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determined from multiple test results by a single, well trained operator in a single lab with one set of equipment. Reproducibility is precision determined from multiple tests in several laboratories. See ASTM E177-14 for more information.

the docket for specific results). Based on these studies, D 8175-18 repeatability is between 0.88 °C and 2.26 °C for the five samples tested. D 8174-18 repeatability is between 0.88 °C and 2.34 °C for the five waste forms tested. The repeatability values of D 8175-18 and D 8174-18 are consistent with the stated repeatability of the ASTM standards currently required by SW-846 Methods 1010A and 1020B (i.e., ASTM standards D 3278-78, D 93-79, and D 93-80). EPA understands that future updates to ASTM standards D 8175-18 and D 8174-18 will have more robust precision and accuracy values when ASTM completes interlaboratory validation of the methods. EPA will update the regulation or revisit the accuracy of these test methods, if necessary.

E. Why is EPA not removing the currently required flash point test methods?

ASTM standards D 93-79, D 93-80, and D 3278-78 remain technically acceptable methods for determinations of flash point for ignitable liquids. The Agency strongly encourages generators and laboratories to use alternatives to mercury thermometers whenever possible but is also proposing flexibility by not requiring that existing equipment be modified or replaced to remove mercury thermometers already in use. The Agency anticipates that domestic and international efforts to reduce mercury usage, the environmental benefits of removing mercury from the workplace, and the economic benefits from reduced testing costs will result in generators and laboratories adopting the new methods over time. This shift toward using the new methods will result in the reduction and eventual end of mercury thermometer use in flash point testing as part of the normal process of upgrading or replacing laboratory equipment.

The Agency is interested in input from the public on whether it would be more appropriate to remove the incorporation by reference of D 93-79, D 93-80, and D 3828-78 from SW-846 and 40 CFR 261.21 at this time. The SW-846 Test Methods program states a preference

for the regulated community to use the most up-to-date version of SW-846 methods. However, to provide flexibility, both the current and proposed methods would need to be specified in the regulation. By leaving ASTM standards D 93-79, D 93-80, and D 3278-78 incorporated by reference within SW-846 Methods 1010 and 1020 and the ignitability regulation, the Agency intends to provide the regulated community the time it needs to transition between the old and new test standards. The Agency may remove ASTM standards D 93-79, D 93-80, and D 3278-78 from SW-846 Methods 1010 and 1020 and the ignitability regulation in a future update.

IV. Codification of Guidance into the Ignitability Characteristic

A. Aqueous Alcohol Exclusion

1. Why is EPA proposing a revision to the aqueous alcohol exclusion?

As part of its effort to update the ignitability methods, the Agency reviewed the exclusion for aqueous solutions containing ignitable alcohols to determine if the exclusion should be revised. Since 1980, questions regarding the scope of the exclusion have been raised. As discussed in more detail in Section II.F. of this notice, EPA has provided clarification by interpreting the exclusion to include any alcohol or combination of alcohols (except if the alcohol has been used for its solvent properties and is one of the alcohols specified in EPA Hazardous Waste No. F003 or F005) that contains less than 24 percent alcohol by volume, even if additional non-alcoholic components are present, and at least 50 percent water by weight.

EPA has since become aware that the aqueous alcohol exclusion may inadvertently exclude certain wastes from the ignitibility characteristic – aqueous liquids with small amounts of alcohol, where these wastes are ignitable due primarily to non-alcoholic components – contrary to the intent of the exclusion. For example, the exclusion may apply to an aqueous waste stream that contains a small concentration of an ignitable alcohol and a large concentration

of an ignitable non-alcoholic component. This waste would be excluded from the ignitability characteristic despite potentially exhibiting the same hazards as ignitable wastes that do not fall within the scope of the exclusion.

EPA is currently unaware of existing mismanagement or damage cases resulting from this interpretation, and it may only affect a small number of (currently unknown) waste streams. The Agency solicits information on the experience of the regulated community, state authorized programs, and others in implementing this provision of the ignitability characteristic (See Section IV.A.3. in this notice).

2. What are the proposed changes to the aqueous alcohol exclusion?

Due to questions received about the alcohol exclusion under the RCRA hazardous waste ignitibility characteristic, EPA wants to use this opportunity to clarify the exclusion's scope by proposing to codify the existing guidance into the regulatory text. Specifically, EPA is proposing to revise the aqueous alcohol exclusion from "other than an aqueous solution containing less than 24 percent alcohol by volume" to "other than a solution containing less than 24 percent of any alcohol or combination of alcohols (except if the alcohol has been used for its solvent properties and is one of the alcohols specified in EPA Hazardous Waste No. F003 or F005) by volume and at least 50 percent water by weight." This proposed change removes the term "aqueous" from §261.21(a)(1), which is currently undefined in the RCRA hazardous waste regulations, and specifies what percentage of water defines the scope of this exclusion. The Agency notes that the water content of a waste is not a method-defined parameter and more than one method or procedure may be appropriate for measuring the water content of a sample. Existing SW-846 methods for water quantification include EPA SW-846 Methods 9000 and 9001. An analyst should choose the most appropriate method for measuring water content based on the physical

and chemical properties of their waste.

Codifying the guidance into the regulatory text would provide clarity and certainty for the regulated community and will remove the need for generators and laboratories or managers of waste to rely on multiple documents to understand the intended scope of the alcohol exclusion.

Today's proposed action would have no effect on 40 CFR 403.5(b)(1), which prohibits "pollutants which create a fire or explosion hazard in the POTW [publicly owned treatment work], including, but not limited to, wastestreams [sic] with a closed cup flash point of less than 140 degrees Fahrenheit or 60 degrees Centigrade using the test methods specified in 40 CFR 261.21" with no exemption for aqueous alcohol solutions (July 24, 1990 Federal Register; 55 FR 30082).[11] Any revisions made to the aqueous alcohol exclusion in §261.21(a)(1) from this rule would not change its inapplicability to 40 CFR 403.5(b)(1).

3. Solicitation of public input on other changes to the aqueous alcohol exclusion for ignitability

Because the aqueous alcohol exclusion could be interpreted to be more broadly applicable than originally intended (See Section IV.A.1. in this notice), EPA is seeking input on whether any additional revisions should be made to the aqueous alcohol exclusion in §261.21(a)(1). The Agency is interested in the experiences of state authorized programs that manage excluded aqueous alcohols as solid waste and whether state programs have more stringent requirements. The Agency is also interested in input from waste generators, laboratories, and other members of the public who may have information regarding the specific hazards, or lack thereof, of managing waste streams pursuant to the current exclusion. This

[11] EPA evaluated whether the aqueous alcohol exclusion in §261.21 should apply to 40 CFR 403.5(b)(1) and concluded that extending the exclusion to 40 CFR 403.5(b)(1) is not appropriate. (July 24, 1990 Federal Register; 55 FR at 30086). "POTW collection systems are an ideal environment for generation of flammable/ignitable atmospheres… allowing an exemption from the flash point prohibition for aqueous solutions containing less than 24 percent alcohol by volume would not sufficiently protect POTWs." (ibid.)

information might include: how much waste is generated and managed under the exclusion for aqueous alcohol solutions, how specific waste is currently managed, what waste-specific or industry-specific management standards or established practices for solutions of aqueous alcohol waste already exist, what waste forms are not currently excluded but may warrant exclusion due to a lack of risk to human health or the environment, what specific waste forms may currently be excluded despite presenting risks to human health or the environment, and any examples of waste mismanagement, damage, or injury resulting from waste managed under the aqueous alcohol exclusion. This information may help identify appropriate revisions to the aqueous alcohol exclusion for ignitable liquids to limit the exclusion to its original intent.

Possible revisions to the aqueous alcohol exclusion could include explicitly identifying specific waste streams in the regulation to which the exclusion would apply to remove the uncertainty regarding the current scope of the exclusion and narrowing the types of alcohol that would qualify for the aqueous alcohol exclusion. Other considerations could include adding a minimum alcohol content as a requirement for excluded wastes to better target potential waste streams that flash primarily from their alcoholic components or adding to or improving the existing criteria a waste must meet to be eligible for the exclusion (e.g., raise the minimum water content for aqueous alcohol solutions) to decrease the likelihood that a liquid waste excluded from the ignitability characteristic would be able to sustain combustion or otherwise contribute to an ongoing fire. The Agency seeks information that can be used to determine appropriate revisions to the aqueous alcohol exclusion.

B. Multiphase Testing

1. Why is the Agency proposing a revision to codify sampling guidance for multiphase wastes?

The Agency has received questions in the past on sampling wastes that are multiple phases or may become multiple phases during normal management. The proposed and current test methods for ignitability contain instructions and procedures specific to that ASTM standard. The Agency is proposing to add new language to 261.21(a) to clarify that EPA's existing sampling procedures for multiphase samples would be applicable to all liquid wastes tested under 261.21. Existing guidance from the Agency states that multiphase mixtures should be separated so that each phase is analyzed individually (discussed further below).

2. Proposed codification of guidance for multiphase waste sampling

The Agency is proposing to add a new paragraph to §261.21(a) that clarifies how to properly test multiphase wastes containing multiple liquid(s) with or without solids for ignitability determinations. This added language would codify EPA's long-standing sampling guidance for multiphase wastes, which are wastes that, due to differences in density (e.g., oil/water) or physical form (e.g., solid/liquid), separate into two or more phases. EPA's long-standing sampling guidance states that for multiphase mixtures, a generator and laboratory should separate the sample into all of its different solid and/or liquid phases, to the extent practicable, and analyze each one individually in accordance with §261.21(a) to determine whether that phase exhibits the characteristic of ignitability. However, care should be taken to avoid loss of volatiles during separation, and it may not be possible to remove solids in all multiphase wastes. If the individual phases cannot be separated without an appreciable loss of volatiles such that the ignitability test results may be affected, then the multiphase waste should be tested for flash point as a whole.

The Agency notes that some waste mixtures may initially be one phase upon generation and later separate into two or more phases during the course of normal management. The

requirement to make hazardous waste determinations upon generation and at any time during the course of management (including if phase separation occurs) is already clearly stated in 40 CFR §262.11(a). "The hazardous waste determination for each [RCRA] solid waste must be made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change." This policy was reaffirmed in the hazardous waste generator proposed and final rules (80 FR 57938 and 81 FR 85751).

EPA's existing guidance on multiphase mixtures, which applies at initial generation and during the course of normal management, as applicable, in SW-846 states to break up and separate phases when possible (SW-846 Chapter 2, pp 8-9). For example, the Agency has explained that a hazardous waste determination is required for both phases of a multiphase liquid and that the RCRA sampling protocol called the COLIWASA (Composite Liquid Waste Sampler, ASTM D-5495), found in Chapter Nine of EPA's waste testing guidance, "Test Methods for Evaluating Solid Waste (SW-846)," can be used for this purpose.[12] The proposed regulatory language in this notice would clarify that multiphase wastes should be separated out into its different liquid and/or solid phases, to the extent possible, before then testing each individual phase for ignitability in accordance with §261.21.

Related to this issue, EPA notes that determining that a waste contains liquid and separating liquid from solid may be relatively straightforward through observation, decanting, pipetting, or simple gravity filtration (i.e., EPA Method 9095, Paint Filter Liquids Test or PFLT).

[12] Letter dated November 20, 2012 from Betsy Devlin, USEPA, to Gary Jones, Printing Industries of America, available at www.epa.gov/rcraonline (RCRA Online Number 14834). A copy of this letter is available in the docket to today's proposed rule.

However, confirming that a waste *does not* contain liquid might not be possible using these techniques for some wastes. In 1993, the Agency proposed Update II to SW-846, which included modified language in SW-846 to state that the pressure filtration technique specified in SW-846 Method 1311 (Toxicity Characteristic Leaching Procedure or TCLP; see Section 7.1.1) should be used to determine if a waste contains a free liquid as part of making hazardous waste characteristics determinations such as ignitability or corrosivity (August 31, 1993 Federal Register; 58 FR 46052). The Agency did not finalize this proposed modification due to commenters' concerns that the proposed action would discourage the use of Method 9095 (PFLT) in demonstrating that a free liquid exists. In the preamble to the final rule, EPA clarified that the pressure filtration technique should be used to definitively determine that a free liquid *did not* exist (January 13, 1995 Federal Register; 60 FR 3089). EPA stated,

> ''The definitive procedure for determining if a waste contains a liquid for the purposes of the ignitability and corrosivity characteristics is the pressure filtration technique specified in Method 1311. However, if one obtains a free liquid phase using Method 9095, then that liquid may instead be used for purposes of determining ignitability and corrosivity. However, wastes that do not yield a free liquid phase using Method 9095 should then be assessed for the presence of an ignitable or corrosive liquid using the pressure filtration technique specified in Method 1311.'' (60 FR 3092, January 13, 1995).

EPA also stated that it may re-propose modifying its guidance in Chapter 7 to reflect its stated position. Therefore, we are requesting comment on adding this language – which reflects EPA's position on determining free liquids – to SW-846 as guidance. Finally, with regard to separating multiphase wastes for purposes of testing, we note that Method 9095B or the pressure filtration technique in Method 1311 can be used to remove solids in multiple phase mixtures,

whenever practical.

V. Additional Corrections to §261.21

A. What are the proposed changes to the definition of ignitable compressed gas in §261.21(a)(3)(ii)?

As part of its effort to modernize and update the RCRA ignitability characteristic regulations in §261.21, the Agency is proposing corrections to the ignitable compressed gas definitions in §261.21(a)(3)(ii), where EPA has determined that particular Department of Transportation (DOT) regulations originally relied upon by EPA have subsequently changed, or certain guidance is no longer available.

First, EPA is proposing to update §261.21(a)(3)(ii)(A) to replace outdated references to the Bureau of Explosives and DOT. The current EPA regulation at §261.21(a)(3)(ii)(A) establishes that a waste compressed gas is ignitable under RCRA when certain flammability concentration criteria are met, as determined "using a test acceptable to the Bureau of Explosives and approved by the director of the Pipeline and Hazardous Materials Technology, U.S. Department of Transportation". However, subsequent to the EPA's original promulgation of this provision, DOT modified their regulations to require ASTM standard E 681-85 or "other equivalent method approved by the [PHMSA] Associate Administrator" as an approved test for this purpose (55 FR 52433). See 49 CFR § 173.115(a). EPA also notes that the Bureau of Explosives is no longer the delegated authority from DOT to determine this testing requirement. (See communications with Bureau of Explosives in the docket to this proposed rule.) Therefore, EPA is proposing to revise §261.21(a)(3)(ii)(A) to specify the ASTM standard E 681-85 as the approved test for determining whether any waste that is an ignitable compressed gas exhibits the RCRA ignitability characteristic, and to remove reference to the Bureau of Explosives as an

approving agency for sampling and test methods. Consistent with the current DOT regulations, EPA is also proposing to correct in its own regulations the reference identifying the agency responsible for approving other tests as equivalent for this purpose, by adding the phrase "approved by the Associate Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation."

EPA is also proposing to revise §261.21(a)(3)(ii)(B)-(D) to align with the existing DOT regulations for flammable gases. Paragraphs (B), (C) and (D) in §261.21(a)(3)(ii) reference "Flame Projection Apparatus," "Open Drum Apparatus," and "Closed Drum Apparatus," all of which are described as methods from the Bureau of Explosives. EPA inquired with the Bureau of Explosives about the continued availability of these test methods and found that the methods were unavailable. (See correspondence with the Bureau of Explosives in the docket to this proposed rule.) In 1980, the Agency incorporated these Bureau of Explosives test methods into its RCRA regulations to be consistent with how flammable gases were defined by DOT requirements. (See 45 FR 33108, May 19, 1980 Federal Register; see also Ignitability Background Document, U.S. EPA, May 2, 1980 in the docket to this proposed rule.) However, as discussed earlier, DOT subsequently updated their definition and testing requirements. Therefore, the Agency is proposing to update the definition of ignitable compressed gas within §261.21(a)(3)(ii)(B)-(D), by removing references to Bureau of Explosives methods, and to mirror the definition and testing that DOT now requires. This change will allow generators to determine if their waste meets the definition of an ignitable compressed gas by determining if it meets the definition of a Division 2.1 flammable gas or a flammable aerosol (see 49 CFR 173.115(a) and (l)).

EPA believes that these updates are necessary to ensure that the RCRA definition reflects

the current DOT regulations for evaluating ignitable compressed gases, consistent with EPA's longstanding approach to incorporate certain DOT requirements when establishing definitions (and associated test methods) that reflect routine waste management conditions for these types of wastes.

B. What are the proposed changes to §261.21(a)(4)(i)(A)?

In 40 CFR part 261, EPA is amending this paragraph to read, "The material meets the definition of a Division 1.1, 1.2, or 1.3 explosive, as defined in §261.23(a)(8), in which case it must be classed as an explosive."

Currently, §261.21(a)(4)(i)(A) references "a Class A explosive or a Class B explosive." The terms Class A and B explosives came from the classification system for explosives used by DOT before 1991. However, DOT revised its classification system for explosives, based on the United Nations Recommendations on the Transport of Dangerous Goods, as part of a final rule issued on December 21, 1990 amending the Hazardous Materials Regulations (55 FR 52402). The new system replaced the use of explosive classes A, B, and C with the classification codes of 1.1, 1.2, 1.3, and 1.4 (49 CFR 173.53). EPA issued a direct final rule on March 18, 2010 that, in part, incorporated these changes into the RCRA hazardous waste regulations. (75 FR 12989). This direct rule amended 40 CFR 261.23(a)(8) to read, "It is a forbidden explosive as defined in 49 CFR 173.54, or is a Division 1.1, 1.2 or 1.3 explosive as defined in 49 CFR 173.50 and 173.53." (75 FR 13002). Before this revision, 40 CFR 261.23(a)(8) referenced DOT's regulations addressing Class A explosives and Class B explosives. However, as the preamble to the rule pointed out, "these cross-references are out of date with the current DOT regulations, and the referenced sections either no longer exist or no longer address these explosives. This change modifies the rule to provide the correct citations." (75 FR 12993). Section

261.21(a)(4)(i)(A) was overlooked by the 2010 EPA rulemaking, and this proposed change corrects that by updating §261.21(a)(4)(i)(A) with the correct references.

C. What are the proposed changes to the notes section of §261.21?

EPA proposes to delete the four notes at the end of 40 CFR 261.21, which are outdated or unnecessary to understanding the regulation.

EPA intends to delete Note 1 because the Bureau of Explosives will no longer be the source for the methods identified in 261.21(a)(3)(ii)(B)-(D). The current language for Note 1 states that a "description of the Bureau of Explosives' Flame Projection Apparatus, Open Drum Apparatus, Closed Drum Apparatus, and method of tests may be procured from the Bureau of Explosives."

EPA proposes to delete Notes 2 and 3. Notes 2 and 3, respectively, state that as part of a U.S. Department of Transportation (DOT) reorganization, the Office of Hazardous Materials Technology (OHMT), which was the office listed in the 1980 publication of 49 CFR 173.300 for the purposes of approving sampling and test procedures for a flammable gas, and the Research and Special Programs Administration (RSPA), which was the office listed in the 1980 publication of 49 CFR 173.151a for the purposes of determining that a material does not present a hazard in transport, ceased operations on February 20, 2005. OHMT and RSPA programs have moved to the Pipeline and Hazardous Materials Safety Administration (PHMSA) in the DOT. This historical information is no longer necessary to understanding the regulation.

EPA also proposes to delete Note 4. Note 4 was added in a 2006 EPA rulemaking to provide referential information to the change made to 40 CFR 261.21(a)(4) in the same action (71 FR 40254). Before the 2006 rule, 40 CFR 261.21(a)(4) incorporated by reference the DOT regulation that defined an oxidizer, 49 CFR 173.151. In 1990, DOT revised its regulations

governing transportation of hazardous materials (55 FR 52402), including 49 CFR 173.151. However, 40 CFR 261.21(a)(4) retained the original DOT definition of an oxidizer, causing the DOT section it referenced to become irrelevant after 1990. EPA's 2006 final rule replaced the obsolete DOT reference in 40 CFR 261.21(a)(4) with the actual language from 49 CFR 173.151 as it existed at the time 40 CFR 261.21 was finalized in 1980. Note 4 states that "[t]he DOT regulatory definition of an oxidizer was contained in §173.151 of 49 CFR, and the definition of an organic peroxide was contained in paragraph 173.151a. An organic peroxide is a type of oxidizer." EPA proposes to remove Note 4 in this rulemaking to avoid possible confusion, particularly because it can be difficult to obtain copies of the CFR from 1980.

VI. Revision to Mercury Thermometer Requirements in the Air Sampling and Stack Emissions Methods

A. Why is EPA proposing revisions to the air sampling and stack emissions methods?

Earlier in this action, EPA proposed to modernize flash point determinations for ignitable liquids by revising Methods 1010A and 1020B to adopt modern consensus-based standards that allow flexibility in temperature measurement devices (see Section III.A.). Similarly, EPA is proposing to update the SW-846 air sampling and stack emissions methods that use mercury thermometers and are method-defined parameters. These methods are Methods 0010, 0011, 0020, 0023A, and 0051. This update would provide current users of these methods the flexibility to use alternative temperature-measuring devices instead of the currently required mercury thermometers. The current users of Methods 0010, 0011, 0020, 0023A, and 0051 would be able to continue using mercury thermometers if desired. While the test methods for flash point of ignitable liquids and test methods for air sampling and stack emissions methods are unrelated in the hazard and matrix of waste they analyze, the underlying rationale and environmental benefits

of providing the flexibility to use alternatives to mercury thermometers are the same. As a result, EPA is proposing these method revisions in the same action. See Section II.G. above for more information on the effects of mercury on human health and the environment.

B. Proposed changes to mercury thermometer requirements in SW-846 method-defined parameter air sampling and stack emissions methods

EPA has identified five SW-846 method-defined parameter test methods for air sampling and stack emissions methods that require the use of mercury thermometers: Methods 0010, 0011, 0020, 0023A, and 0051 (see Section VI.A.). These sampling methods cover emissions from stationary sources, such as hazardous waste incinerators and boilers and industrial furnaces. Many of these sampling methods are modifications of, or are similar to, EPA Method 5 of Appendix A-3 of 40 CFR 60, Determination of Particulate Matter Emissions from Stationary Sources. For Method 5, EPA proposed (77 FR 1130, Jan 9, 2012), and finalized (79 FR 11228, Feb 27, 2014), the use of alternative mercury-free thermometers if the thermometers are, at a minimum, equivalent in terms of performance or are suitably effective for the specific temperature measurement application. EPA is proposing to add similar language, where appropriate, in SW-846 Methods 0010, 0011, 0020, 0023A, and 0051. The removal of the requirement to use mercury thermometers does not change the underlying technology of the methods. Therefore, in accordance with the SW-846 methods policy statement, the method numbers and letters are not being revised due to these changes (see https://www.epa.gov/hw-sw846/policy-statement-about-test-methods-evaluating-solid-waste-physicalchemical-methods). The Agency anticipates that the addition of mercury thermometer alternatives to these methods (i.e., the mirroring of changes made to regulatory requirements under Method 5) should result in a minimal impact to the regulated community. For example, analytical laboratories that offer

these air sampling and stack emissions methods also likely offer Method 5 testing, which already allows for non-mercury thermometer usage. Labs that have non-mercury thermometers for calibrating Method 5 should recognize the benefits of reduced mercury thermometer usage while incurring no additional costs. Alternatively, laboratories may continue using mercury thermometers in the updated methods (see Section III.E.).

VII. Incorporation by Reference

The Methods Innovation Rule, which was finalized on June 14, 2005, revised 40 CFR 260.11 to remove the incorporation by reference of all SW-846 methods except those SW-846 methods that are also regulatory required method-defined parameters. Those methods remain incorporated by reference when used as method-defined parameters under the RCRA regulations and, thus, can only be amended through a regulatory effort.[13]

The Agency is proposing to incorporate by reference ASTM D 8174-18, ASTM D 8175-18, ASTM E 681-85, SW-846 Method 1010B and SW-846 Method 1020C into §261.21 and as applicable into Appendix IX to part 261. These test methods are described in detail in Section III and Section V, above. The Agency is also proposing to incorporate by reference SW-846 Test Methods 0010, 0011, 0020, 0023A, and 0051. These test methods are updated versions of currently incorporated by reference SW-846 Methods 0010, 0011, 0020, 0023A, and 0051, as described in Section VI, above. The Agency is proposing to incorporate by reference Method 0010 into §260.11(c)(3)(i) and Appendix IX to part 261. The Agency is proposing to incorporate by reference Method 0011 into §260.11(c)(3)(viii) and Appendix IX to part 261. The Agency is proposing to incorporate by reference Method 0020 into §260.11(c)(3)(ii) and Appendix IX to

[13] It is important to note that while a method listed in §260.11 is a method-defined parameter, that method also may be used for non-mandatory purposes. For example, the Pensky-Martens method described in Method 1010A could also be used as part of quality control to test a product for purity, which is unrelated to §261.21 and, otherwise, not required under RCRA. In this case, the method would not be a method-defined parameter. In order to be a method-defined parameter, a method must be part of a regulatory requirement under RCRA.

part 261. The Agency is proposing to incorporate by reference Method 0023A into§260.11(c)(3)(ix) Appendix IX to part 261, §266.104(e)(1), and Appendix IX to part 266. The Agency is proposing to incorporate by reference Method 0051 into §260.11(c)(3)(xiii), Appendix IX to part 261, §266.107(f), and Appendix IX to part 266. The Agency is also proposing to incorporate by reference Method 0011 into §260.11(c)(3)(viii) and Appendix IX to part 266. The ASTM standards proposed for incorporation by reference are available for purchase from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, www.astm.org, 877-909-2786. To obtain ASTM E 681-85, call 877-909-2786. The SW-846 Test Methods proposed for incorporation by reference are published in the test methods compendium known as "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, Third Edition, available at https://www.epa.gov/hw-sw846.

VIII. State Authorization

A. Applicability of proposed rule in authorized states

Under section 3006 of RCRA, EPA may authorize qualified states to administer and enforce the RCRA hazardous waste program within the state. Following authorization, EPA retains enforcement authority under sections 3008, 3013, and 7003 of RCRA, although authorized states have primary enforcement responsibility. The standards and requirements for state authorization are found at 40 CFR part 271. Prior to enactment of the Hazardous and Solid Waste Amendments of 1984 (HSWA), a state with final RCRA authorization administered its hazardous waste program entirely in lieu of EPA administering the federal program in that state. The federal requirements no longer applied in the authorized state, and EPA could not issue permits for any facilities in that state, since only the state was authorized to issue RCRA permits. When EPA promulgated new, more stringent federal requirements for these pre-HSWA

regulations, the state was obligated to enact equivalent authorities within specified time frames. However, the new federal requirements did not take effect in an authorized state, until the state adopted the federal requirements as state law. In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), which was added by HSWA, new requirements and prohibitions imposed under HSWA authority take effect in authorized states at the same time that they take effect in unauthorized states. EPA is directed by the statute to implement these requirements and prohibitions in authorized states, including the issuance of permits, until the state is granted authorization to do so. While states must still adopt HSWA related provisions as state law to retain final authorization, EPA implements the HSWA provisions in authorized states until the states do so.

Authorized states are required to modify their programs only when EPA enacts federal requirements that are more stringent or broader in scope than existing federal requirements.[14] RCRA section 3009 allows the states to impose standards more stringent than those in the federal program (see also 40 CFR 271.1). Therefore, authorized states may, but are not required to, adopt federal regulations, both HSWA and non-HSWA, that are considered less stringent than previous federal regulations

B. Effect on state authorization

Today's notice proposes regulations that, if finalized, would not be promulgated under the authority of HSWA. Thus, the standards, if finalized, would be applicable on the effective date only in those states that do not have final authorization of their base RCRA programs. Moreover, authorized states are required to modify their programs only when EPA promulgates federal regulations that are more stringent or broader in scope than the authorized state regulations. For

[14] EPA notes that decisions regarding whether a state rule is more stringent or broader in scope than the federal program are made when the Agency authorizes a state program for a particular rule.

those changes that are less stringent, states are not required to modify their programs. This is a result of section 3009 of RCRA, which allows states to impose more stringent regulations than the federal program.

The proposed revisions to several test methods are considered to be neither more nor less stringent than the existing test methods. Thus, authorized states may, but are not required to, adopt these changes.

IX. Statutory and Executive Orders Reviews

Additional information about these statutes and Executive Orders can be found at http://www.epa.gov/laws-regulations/laws-and-executive-orders.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a significant regulatory action because it does not have a significant economic impact nor does it raise novel legal or policy issues. The Office of Management and Budget (OMB) waived review.

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is expected to be an Executive Order 13771 deregulatory action. Details on the estimated cost savings of this proposed rule can be found in EPA's *Regulatory Impact Analysis of the Modernization of Ignitable Liquid Determination Rule,* which is in the docket.

C. Paperwork Reduction Act (PRA)

The use of the proposed methods or the existing methods impose the same information collection burden as the existing regulation. OMB has previously approved the information collection activities contained in the existing regulations and has assigned OMB control numbers 2050-0053 and 2050-0073.

D. Regulatory Flexibility Act (RFA)

I certify that this proposed action will not have a significant economic impact on a substantial number of small entities under the RFA. In making this determination, the impact of concern is any significant adverse economic impact on small entities. An agency may certify that a rule will not have a significant economic impact on a substantial number of small entities if the rule relieves regulatory burden, has no net burden or otherwise has a positive economic effect on the small entities subject to the rule. As documented in the *Regulatory Impact Analysis of the Modernization of Ignitable Liquid Determinations Rule* found in the docket for this proposal, EPA does not expect the rule to result in an adverse impact to a significant number of small entities. For commercial labs, the analysis presented in Chapter 3 indicates either no change in costs or a cost savings, due to the flexibility afforded by the rule. Therefore, out of the 128 firms defined as small under the Small Business Administration size standards, no firms have costs greater than one percent of annual revenues. EPA has therefore concluded that this proposed action will either relieve regulatory burden or have no net regulatory burden for all directly regulated small entities.

E. Unfunded Mandates Reform Act (UMRA)

As documented in the *Regulatory Impact Analysis of the Modernization of Ignitable Liquid Determinations Rule* found in the docket for this proposal, this proposed action does not contain an unfunded mandate of $100 million or more as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments.

F. Executive Order 13132: Federalism

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on

the distribution of power and responsibilities among the various levels of government.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

This proposed action does not have tribal implications as specified in Executive Order 13175. Because the proposed rule is expected to result in minimal costs and possibly net cost savings, EPA does not expect that it would result in any adverse impacts on tribal entities. Thus, Executive Order 13175 does not apply to this rule.

H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution or Use

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

J. National Technology Transfer and Advancement Act (NTTAA)

This action involves technical standards. The EPA proposes to use ASTM D 8175-18 and ASTM D 8174-18. These test methods were adopted by ASTM in March 2018. These standards are available for purchase from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959. EPA worked with ASTM to specifically develop these consensus-based standards to better suit waste testing by modifying existing ASTM standards.

EPA worked with a member of the ASTM D02.08 Subcommittee (who also represents Stanhope-Seta) to modify existing ASTM methods D 93-16 and D 3828-16a, which were developed by the ASTM D02.08 Subcommittee. These new draft methods were then submitted to ASTM's review process and were approved by the ASTM D34 Committee to become new ASTM methods.

K. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898 (59 FR 7629, February 16, 1994). This proposed rule would only modernize testing and codify guidance for the characterization of ignitable hazardous waste, it would not affect how such waste is disposed of. EPA therefore does not expect it to result in any adverse environmental justice impacts.

List of Subjects

40 CFR Part 260

Environmental protection, Administrative practice and procedure, Confidential business information, Hazardous waste, Incorporation by reference, Reporting and recordkeeping requirements.

40 CFR Part 261

Environmental protection, Hazardous waste, Incorporation by reference, Recycling, Reporting and recordkeeping requirements.

40 CFR Part 266

Environmental protection, Energy, Hazardous waste, Incorporation by reference, Recycling, Reporting and recordkeeping requirements.

Dated: March 21, 2019.

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Andrew R. Wheeler,
Administrator.

For the reasons set forth in the preamble, EPA proposes to amend 40 CFR parts 260 and 261 as follows:

PART 260 –HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921-6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

2. Amend §260.11 by:

a. Adding new paragraphs (b)(11) through (13); and

b. Revising paragraphs (c)(3)(i), (ii), (viii), (ix), (xiii), (xvii), and (xviii).

The additions and revisions read as follows:

§260.11 Incorporation by reference.

* * * * *

(b) * * *

* * * * *

(11) ASTM D 8175-18 "Test Method for Finite Flash Point Determination of Liquid Wastes by Pensky-Martens Closed Cup Tester." IBR approved for §261.21.

(12) ASTM D 8174-18 "Test Method for Finite Flash Point Determination of Liquid Wastes by Small Scale Closed Cup Tester." IBR approved for §261.21.

(13) ASTM E 681-85 "Standard Test Method for Concentration Limits of Flammability of Chemicals (Vapors and gases)." IBR approved for §261.21.

(c) * * *

(3) * * *

(i) Method 0010, dated [TBD] and in the Basic Manual, IBR approved for appendix IX to part 261.

(ii) Method 0020, dated [TBD] and in the Basic Manual, IBR approved for appendix IX to part 261.

* * * * *

(viii) Method 0011, dated [TBD] and in Update III, IBR approved for appendix IX to part 261 and appendix IX to part 266,.

(ix) Method 0023A, dated [TBD] and in Update III, IBR approved for appendix IX to part 261, §266.104, and appendix IX to part 266, ,.

* * * * *

(xiii) Method 0051, dated [TBD] and in Update III, IBR approved for appendix IX to part 261, §266.107, and appendix IX to part 266,

* * * * *

(xvii) Method 1010B, dated December 2018 and in Update VII, IBR approved for §261.21 and appendix IX to part 261.

(xviii) Method 1020C, dated December 2018 and in Update VII, IBR approved for §261.21 and appendix IX to part 261.

* * * * *

PART 261 –IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

3.The authority citation for part 261 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921, 6922, 6924(y) and 6938.

4. Amend §261.21 by:

a. Revising paragraphs (a)(1), (3)(ii), and (4)(i)(A) adding paragraph (a)(5); and

b. Removing Notes 1, 2, 3, and 4 to read as follows:

§261.21 Characteristic of ignitability.

(a) * * *

(1) It is a liquid, other than a solution containing less than 24 percent of any alcohol or combination of alcohols (except if the alcohol has been used for its solvent properties and is one of the alcohols specified in EPA Hazardous Waste No. F003 or F005 in 40 CFR 261.31) by volume and at least 50 percent water by weight, that has a flash point less than 60 °C (140 °F), as determined by using one of the following ASTM standards: ASTM D 93-79, D 93-80, D 3278-78, D 8174-18 or D 8175-18 as specified in SW-846 Test Methods 1010B or 1020C (incorporated by reference, see §260.11 of this subchapter).

* * * * *

(3) * * *

(ii) A compressed gas shall be characterized as ignitable if any one of the following occurs:

(A) Either a mixture of 13 percent or less (by volume) with air forms a flammable mixture or the flammable range with air is wider than 12 percent regardless of the lower limit. These limits shall be determined at atmospheric temperature and pressure. The method of sampling and test procedure shall be the ASTM E 681-85 (incorporated by reference, see § 260.11 of this subchapter), or other equivalent methods approved by the Associate Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation.

(B) It is determined to be flammable or extremely flammable using 49 CFR 173.115(l).

(4) * * *

(i) * * *

(A) The material meets the definition of a Division1.1, 1.2, or 1.3 explosive, as defined in

§261.23(a)(8), in which case it must be classed as an explosive,

* * * * *

(5) It is a multiphase mixture, where any liquid phase has the flash point described in paragraph (a)(1) of this section, or any non-liquid phase has the properties described in paragraph (a)(2) of this section.

* * * * *

5. Amend Tables 1 and 2 of Appendix IX to Part 261 by removing the text “1010A” and adding “1010B” in its place, wherever it appears (56 occurrences); and removing the text “1020B” and adding “1020C” in its place, wherever it appears (56 occurrences).

[FR Doc. 2019-05878 Filed: 4/1/2019 8:45 am; Publication Date: 4/2/2019]