UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

FEB 8 2007

Mr. Wade Winters, President
Regulatory Resources, Inc.
240 Joshua Road
Kennewick, Washington 99338

Dear Mr. Winters:

Thank you for your December 18, 2000, letter to Ms. Sasseville requesting an interpretation of the RCRA hazardous waste regulations, which reference regulations of the U.S. Department of Transportation (DOT). Your email of June 29, 2006, to David Eberly and Sue Slotnick brought to my attention that the Agency had not responded to your letter. I apologize for the delay in our response.

As you note in your letter, DOT revised and restructured 49 CFR Part 173 in 1990 (55 FR 52617, December 21, 1990) such that the citations to the definitions for a flammable compressed gas, an oxidizer, a forbidden explosive, a Class A explosive, and a Class B explosive contained in the ignitability characteristic (40 CFR 261.21) and the reactivity characteristic (40 CFR 261.23) no longer refer to the correct DOT regulations. The Agency has been aware of this problem and has recently addressed this issue for the ignitability characteristic at 71 FR 40254, July 14, 2006 (see enclosure 1, which contains the appropriate portions of the Federal Register notice in which the obsolete references to the DOT regulations in the ignitability definitions at 40 CFR 261.21 were replaced). The Agency also plans to address this issue for the reactivity characteristic in a future Federal Register notice. For your convenience, the 1980 DOT regulatory language for explosives is reproduced in enclosure 2.

With respect to the specific questions you raised in your letter, our responses are summarized below:

1. If the 40 CFR 261.23(a)(8) reactive criterion is no longer valid because "those referenced DOT regulations cannot be used," why is the Office of Solid Waste maintaining the ignitable gas and oxidizer criteria as is?

   Your letter referenced a February 24, 1995, EPA memorandum which you believe withdrew the eighth criterion §261.23(a)(8) under the characteristic of reactivity. It did not. In order to withdraw or revise any regulatory requirement, EPA would have to engage in a rulemaking process, in which public comment was solicited. Therefore, all eight (8) reactivity criteria in 40 CFR 261.23(a) remain in effect.

With respect to references to DOT regulations for an "ignitable compressed gas" and an "oxidizer," as noted above, EPA has revised the regulatory text and replaced the obsolete references to the DOT regulations contained in the definitions for an ignitable compressed gas and an oxidizer, 40 CFR 261.21(a)(3) and 261.21(a)(4), respectively, with the actual language from the referenced sections of the DOT regulations that was published in Title 49 of the CFR at the time of the finalization of the RCRA regulations (1980). The 1980 DOT regulatory language was included in place of the references to the 1980 DOT regulations in order to make it easier for the regulated community to find and apply the definitions of ignitable compressed gas and oxidizer for the purposes of §261.21. The implementation and enforcement of the ignitability characteristic has not changed in any way since the time that it was first promulgated in 1980.

The 1980 DOT definitions for forbidden, Class A, and Class B explosives contain many references to other regulatory sections within the 1980 DOT regulations; it was not feasible to include all of the language for the explosives definitions in 40 CFR 261.23(a)(8) (in place of the references) as was done for the definitions for an ignitable compressed gas and for an oxidizer. At the time that the DOT hazardous materials regulations were revised (1990), DOT included in the new regulations a table that showed the relationship between the old definitions and the new definitions for forbidden, Class A, and Class B explosives. EPA is now preparing a Federal Register notice which will update 40 CFR 261.23(a)(8) based on the table published by DOT.

2. If a generator must use characterization criteria that were last published ten years ago, is the Office of Solid Waste providing the DOT hazardous material regulations classification data for these materials and the test criteria that accompanies the DOT classification determination?

   As noted previously, the Agency has already revised the regulatory text for the ignitability characteristics of ignitable compressed gas and oxidizer; these changes were published in the Federal Register at 71 FR 40254 and will be in the Code of Federal Regulations next year. For your convenience, the 1980 DOT regulatory language for a forbidden explosive, a Class A explosive, and a Class B explosive are reproduced in enclosure 2 to this letter. The 1980 DOT regulations for ignitable compressed gas, oxidizer, and explosives are to be relied upon for the purposes of identifying a solid waste as exhibiting these specific hazardous characteristics.

3. If "Yes" to question 2, does the Office of Solid Waste provide the entire list of liquid oxidizing materials from the Hazardous Materials Table in 49 CFR 172.101 since the DOT classification criteria for liquid oxidizers in the 1990 CFR allowed the generator to classify based on analogy with existing liquid oxidizers from the Hazardous Materials Table?

   Only the 1980 DOT regulatory definitions specifically cited in the RCRA rules are to be used for the purposes of identifying a hazardous waste. Therefore, the definition of an oxidizer published in 1980 in Title 49 of the CFR should not be used, unless it is cited in the RCRA hazardous waste rules, in identifying a waste as hazardous.

4. If "No" to question 2, how is the generator to obtain the necessary 1990 DOT classification information required by the RCRA regulations for the designation of ignitable gases and oxidizers?

   See the response to questions 1 and 2. See also 71 FR 40254.

5. Why and how did the Office of Solid Waste determine that DOT forbidden explosives and former DOT Class A and B explosives were no longer a threat to human health and the environment when managed as waste and disposed?

   The 1980 DOT regulations cited in the RCRA reactivity characteristic (forbidden, Class A, and Class B explosives) are still in effect and are reproduced in their entirety in the attachment for your convenience. Thus, the Office of Solid Waste has not determined that such explosives are no longer a threat to human health and the environment when disposed.

Should you need further information about the identification of characteristically hazardous waste, please contact Cathy Davis at (703) 308-7271 or davis.catherinem@epa.gov.

Sincerely,

Robert Dellinger, Director
Hazardous Waste Identification Division

Enclosure

DOT REGULATIONS PUBLISHED IN 1980
Forbidden Explosives, Class A Explosives, and Class B Explosives

The following citations were obtained from the Westlaw database on November 2, 2005. The 1980 regulatory language for forbidden explosives, Class A explosives, and Class B explosives is followed by the regulatory language for the regulations that are cited in §§173.51, 173.53, and 173.88.

49 CFR 173.51 Forbidden Explosives.

Unless otherwise provided in this subchapter, the transportation of the following explosives is forbidden:

(a) Explosive compounds, mixtures or devices which ignite spontaneously or undergo marked decomposition when subjected to a temperature of 167 degrees F. (75 degrees C.) for 48 consecutive hours.

(b) New explosive compounds, mixtures or devices except as provided for in §173.86.

(c) Explosive mixtures or devices containing an ammonium salt and a chlorate.

(d) Explosive mixtures or devices containing an acidic metal salt and a chlorate.

(e) Leaking or damaged packages of explosives.

(f) Nitroglycerin, diethylene glycol dinitrate or other liquid explosives not authorized by §173.53(e) or (h). (For shipment by motor vehicle other than by common carrier, see §177.822(b) of this subchapter.)

(g) Loaded firearms (except as provided in 14 CFR 108.11).

(h) Fireworks that combine an explosive and a detonator or blasting cap.

(i) Firewo rks containing yellow or white phosphorous.

(j) To y torpedoes, the maximum outside dimension of which exceeds ⅞-inch, or toy torpedoes containing a mixture of potassium chlorate, black antimony, and sulfur with an average weight of explosive composition in each torpedo exceeding four grains.

49 CFR 173.53 Definition of Class A Explosives.

(a) Type 1 Solid explosives which can be caused to deflagrate by contact with sparks or flame such as produced by safety fuse or an electric squib, but cannot be detonated (see Note 1) by means of a No. 8 test blasting cap (see Note 2). Example: Black powder and low explosives.

(b) Type 2 Solid explosives which contain a liquid explosive ingredient, and which, when unconfined (see Note 3), can be detonated by means of a No. 8 test blasting cap (see Note 2); or which can be exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing a liquid explosive ingredient.

(c) Type 3 Solid explosives which contain no liquid explosive ingredient and which can be detonated, when unconfined (see Note 3), by means of a No. 8 test blasting cap (see Note 2); or which can be

exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing no liquid explosive ingredient, trinitrotoluene, amatol, tetryl, picric acid, urea nitrate, pentolite, and commercial boosters.

(d) Type 4 Solid explosives which can be caused to detonate when unconfined (see Note 3), by contact with sparks or flame such as produced by safety fuse or an electric squib; or which can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), in more than 50 percent of the trials under a drop of less than 4 inches. Example: Initiating and priming explosives, lead azide, fulminate of mercury, etc., and high explosives.

(e) Type 5 Desensitized liquid explosives are explosives which may be detonated separately or when absorbed in sterile absorbent cotton, by a No. 8 test blasting cap (see Note 2); but which cannot be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), by a drop of less than 10 inches. The desensitizer must not be significantly more volatile than nitroglycerine and the desensitized explosive must not freeze at temperatures above minus 10 degrees F. Example: High explosives, desensitized nitroglycerine.

(f) Type 6 Liquid explosives that can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of less than 10 inches. Example: Nitroglycerin. (See §173.51(a)(3).)

(g) Type 7 An initiating device is a metal or plastic casing containing initiating or priming explosives, Class A-Type 4, either with or without other explosives. It is activated by any one of several means, including an electrical pulse, a flame, a shock or detonation wave, mechanical impact (percussion) pressurized gas, or high intensity light beam. It produces an explosive output that may be used to initiate another explosive or to perform work. A time delay may be incorporated in the means of applying the stimulus, or in the initiating device itself.

(1) A detonator (see Note 5) is an initiating device (other than one properly described as a detonating fuze) which contains no more than 10 grams of total explosives weight, excluding ignition and delay charges per unit. There are different kinds of detonators including the following:

(i) Blasting caps which are activated by safety fuse.

(ii) Blasting caps which are percussion activated.

(iii) Blasting caps which are activated by flexible detonating cord, including-

(A) Delay connectors in plastic sheaths which consist of a plastic sleeve that contains a suitable delay system with receptor and donor explosive charges in the center portion. Each end of the sleeve is made so that flexible detonating cord can be inserted into and locked to the connector;

(B) Delay connectors in metal tubes which consist of a system with a receptor and donor charge positioned between two detonators with the entire assembly placed in a metal tube having both ends open for the insertion of flexible detonating cord;

(C) Delay connectors with detonating cord pigtails which consist of delay connectors as described in paragraph (g)(1)(iii)(B) of this section that have short lengths of detonating cord inserted into both ends and crimped in place; and

(D) Nonelectric instantaneous and delay caps which consist of blasting caps to which is assembled a length of detonating cord that may have a transfer explosive charge at the opposite end.

(iv) Blasting caps which are activated by gas pressurization or reaction.

(v) Blasting caps which are activated by a shock tube.

(vi) Electric blasting caps which are activated by an electric current.

(2) A detonating primer (see Note 6) is an initiation device for commercial use which contains more than 10 grams of total explosives weight, excluding ignition and delay charges per unit.

(3) Detonating fuzes, class A, are used in the military service to detonate the high explosive bursting charges of projectiles, mines, bombs, torpedoes, and grenades. In addition to a powerful detonator, they may contain several ounces of a high explosive, such as tetryl or dry nitrocellulose, all assembled in a heavy steel envelope. They may also contain a small amount of radioactive component. Those that are so made and packed that they will not cause functioning of other fuzes, explosives, or explosive devices in the same or adjacent containers are classed as class C explosives.

(h) Type 8. Any device or solid or liquid compound or mixture which is not specifically included in any of the above types, and which under special conditions may be so designated and examined by the Bureau of Explosives or the Bureau of Mines, U.S. Department of the Interior, and approved by the Director, OHMT. Example: Shaped charges, commercial.

(1) A shaped charge, commercial, consists of a plastic, paper, or other suitable container comprising a charge of not to exceed 8 ounces of a high explosive containing no liquid explosive ingredient and with a hollowed-out portion (cavity) lined with a rigid material. Detonators or other initiating elements may not be assembled in the device unless examined by the Bureau of Explosives and approved by the Director, OHMT.

(i) Ammunition for cannon Ammunition for cannon is fixed, semi-fixed or separate loading ammunition which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(j) Ammunition for cannon with projectiles Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, or shell is fixed ammunition assembled in a unit consisting of the cartridge case containing the propelling charge and primer, and the projectiles, or shell, fuzed or unfuzed. Detonating fuzes, tracer fuzes, explosive or ignition devices, or fuze parts with explosives contained therein may not be assembled in ammunition or included in the same outside package unless shipped by or for the Department of Defense (DOD) and in accordance with established practices and procedures specified by DOD.

(k) Explosive projectiles Explosive projectiles are shells, projectiles, warheads, or rocket heads, loaded with explosives or bursting charges, with or without other materials, for use in cannons, guns, tubes, mortars or other firing or launching devices.

(l) Grenad es Grenades, hand or rifle, are small metal or other containers designed to be thrown by hand or projected from a rifle. They are filled with an explosive or a liquid, gas, or solid material such as a toxic or tear gas or an incendiary or smoke producing material and a bursting charge. When shipped without explosives or bursting charges, see §§173.100(y), 173.330, 173.350, and 173.385.

(m) Explosive bombs Explosive bombs are metal or other containers filled with explosives. They are used in warfare and include aeroplane bombs and depth bombs.

(n) Explosive mines Explosive mines are metal or composition containers filled with a high explosive.

(o) Explosive torpedoes Explosive torpedoes, such as are used in warfare, are metal devices containing a means of propulsion and a quantity of high explosives.

(p) Rocket ammunition Rocket ammunition (including guided missiles) is ammunition designed for launching from a tube, launcher, rails, trough, or other launching device, in which the propellant material is a solid propellant explosive. It consists of an igniter, rocket motor, and projectile

(warhead) either fuzed or unfuzed, containing high explosives or chemicals. Rocket ammunition may be shipped completely assembled or may be shipped unassembled in one outside container.

(q) Ammunition for small arms with explosive projectiles or incendiary projectiles Ammunition for small arms with explosive projectiles and ammunition for small arms with incendiary projectiles is fixed ammunition of caliber 20 millimeters to be used in machine guns or cannons, and consists of a metallic cartridge case, the primer and the propelling charge, with explosive projectile or incendiary projectile with or without detonating fuze; the component parts necessary for one firing being all in one assembly. Detonating fuzes, tracer fuzes, explosive or ignition devices or fuze parts with explosives contained therein must not be assembled in ammunition or included in the same outside package unless shipped by, for or to the Departments of the Army, Navy, and Air Force of the U.S. Government or unless of a type approved by the Department.

(r) Chemical ammunition Chemical ammunition used in warfare is all kinds of explosive chemical projectiles, shells, bombs, grenades, etc., loaded with toxic, tear, or other gas, smoke or incendiary agent, also such miscellaneous apparatus as cloud-gas cylinders, smoke generators, etc., that may be utilized to project chemicals.

(s) Boosters, bursters, and supplementary charges Boosters and supplementary charges consist of a casing containing a high explosive and are used to increase the intensity of explosion of the detonator of a detonating fuze. Bursters consist of a casing containing a high explosive and are used to rupture a projectile or bomb to permit release of its contents.

(t) Jet thrust uni ts (jato), class A explosives; rocket motors, class A explosives; igniters, jet thrust (jato), class A explosives; and igniters, rocket motor, class A explosives:

(1) Jet thrust units (jato), class A explosives, are metal cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Under certain conditions the chemical fuel with which the unit is loaded may explode. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off.

(2) Rocket motor, class A explosives, is a device containing a propelling charge and consisting of one or more continuous type combustion unit(s) closed at one end (closure may be an igniter with a thrust plate) and with a nozzle(s) at the other end. (The rocket motor carries its own solid oxidizer-fuel combination.) The propelling charge consists of a mixture of chemicals and/or chemical compounds which when ignited is capable of burning rapidly and producing considerable pressure and which will sustain a detonation. Rocket motors, class A explosives, should be nonpropulsive in shipment (see paragraphs (t)(2)(i) and (ii) of this section). Rocket motors, class A explosives, are designed to be ignited by an electrically actuated device which may be an igniter, or by other means. They are used to propel and/or provide thrust for guided missiles, rockets, or spacecraft.

(i) A rocket motor to be considered "nonpropulsive" must be capable of unrestrained burning and will not move appreciably in any direction when ignited by any means. Blast deflectors, thrust neutralizers, or other similar devices must be proven adequate by test prior to authorization for use.

(ii) Rocket motors, class A explosives may be shipped in a propulsive state only under conditions approved by the Department of Defense.

(3) Igniters, jet thrust (jato), class A explosives, and igniters, rocket motor, class A explosives, are devices consisting of an electrically operated or remotely controlled ignition element and a charge of fast-burning composition meeting the definition prescribed for Type 1 class A explosives (see paragraph (a) of this section), assembled in a unit for use in igniting the propelling charge of jet thrust units or rocket motors.

(u) Charged well casing jet perforating guns. Charged well casing jet perforating guns are steel tubes or metallic strips into which are inserted shaped charges connected in series by primacord. Shaped charges must be of a type described in paragraph (h)(1) of this section, except that each shaped charge installed in the steel tube or metallic strip shall contain not over 4 ounces of high explosive. Charged well casing jet perforating guns must not be transported with blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns.

(v) Type 9 Propellant explosives, class A, are solid chemicals or solid chemical mixtures which are designed to function by rapid combustion of successive layers, generally with little or no smoke. The combustion is controlled by composition, size, and form of grain. Propellant explosives, class A, include some types of smokeless powder and some types of solid propellant explosives for jet thrust units, rockets, or other devices. Any propellant explosive is class A which detonates in any one out of five trials when tested in the packages in which it is offered for transportation. In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

Note 1: The detonation test is performed by placing the sample in an open-end fiber tube which is set on the end of a lead block approximately 1½ inches in diameter and 4 inches high which, in turn, is placed on a solid base. A steel plate may be placed between the fiber tube and the lead block.

Note 2: A No. 8 test blasting cap is one containing two grams of a mixture of 80 percent mercury fulminate and 20 percent potassium chlorate, or a cap of equivalent strength.

Note 3: "Unconfined" as used in this section does not exclude the use of a paper or soft fiber tube wrapping to facilitate tests.

Note 4: The Bureau of Explosives Impact Apparatus is a testing device designed so that a guided 8-pound weight may be dropped from predetermined heights so as to impact specific quantities of liquid or solid materials under fixed conditions. Detailed prints may be obtained from the Bureau of Explosives, 1920 L Street, N.W., Washington, D.C. 20036

Note 5: See § 173.100 (gg) for criteria that determine whether a particular type of detonator can be classed as a Class C explosive.

Note 6: See § 173.100 (hh) for criteria that determine whether a particular type of detonating primer can be classed as a Class C explosive.

(w) Detonating cord is a device consisting of a core of pentaerythrite tetranitrate, cyclotrimethylene-trinitramine or similar explosive overspun with tapes, yarns and plastics or waterproofing compounds without wire countering.

49 CFR 173.88 Definition of Class B Explosives.

(a) Explosives, class B, are defined as those explosives which in general function by rapid combustion rather than detonation and include some explosive devices such as special fireworks, flash powders, some pyrotechnic signal devices and liquid or solid propellant explosives which include some smokeless powders. These explosives are further specifically described in paragraphs (b) to (g) of this section.

(b) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles or without projectiles, or shell, and catapult charges exceeding 2 inches in diameter, is fixed ammunition

assembled in a unit consisting of the cartridge case containing the propelling charge and primer with empty, inert-loaded, or solid projectiles, or without projectiles, which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(c) Rocket ammunition is fixed ammunition which is fired from a tube, launcher, rails, trough, or other device as distinguished from cannon ammunition which is fired from a cannon, gun, or mortar. It consists of an igniter, a rocket motor, and empty projectile, inert-loaded projectile, or solid projectile.

(d) Special fireworks are devices designed primarily to produce visible or audible effects, or both visible and audible effects by combustion or explosion. Fireworks must be in a finished state, exclusive of mere ornamentation, and must be so constructed and packed that loose pyrotechnic composition will not be present in packages in transportation. Examples of special fireworks are toy torpedoes, railway torpedoes, some firecrackers and salutes (depending on pyrotechnic composition or quantity), exhibition display pieces, aeroplane flares, illuminating projectiles, incendiary projectiles, incendiary bombs or incendiary grenades and smoke projectiles or smoke bombs fuzed or unfuzed containing expelling charges, but without bursting charges, flash powders in inner units not exceeding 2 ounces each, flash sheets in interior packages, flash power or spreader cartridges containing not over 72 grains of flash powder each (see § 173.60 for shipments made as low explosives), and flash cartridges consisting of a paper cartridge shell, small-arms primer, and flash composition, not exceeding 180 grains all assembled in one piece. See also definitions and standards found in APA Standard 87-1. (See § 173.100(r) for common fireworks.)

(e) Jet thrust units (jato), class B explosives; rocket motors, class B explosives; igniters, jet thrust (jato), class B explosives; and igniters, rocket motors, class B explosives:

(1) Jet thrust units (jato), class B explosives, are metal cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off.

(2) Rocket motor, class B explosives, is a device containing a propelling charge and consisting of one or more continuous type combustion unit(s), closed at one end (closure may be an igniter with a thrust plate) and with a nozzle(s) at the other end. The propelling charge consists of a mixture of chemicals and/or chemical compounds which when ignited is capable of burning rapidly and producing considerable pressure and which will not sustain a detonation. (The rocket motor carries its own solid oxidizer-fuel combination.) Rocket motors, class B explosives, should be nonpropulsive in shipment (see paragraphs (e)(2)(i) and (ii) of this section) Rocket motors, class B explosives, are designed to be ignited by an electrically actuated device which may be an igniter, or by other means. They are used to propel and/or provide thrust for guided missiles, rockets, or spacecraft.

(i) A rocket motor to be considered "nonpropulsive" must be capable of unrestrained burning and will not move appreciably in any direction when ignited by any means. Blast deflectors, thrust neutralizers or other similar devices must be proven by test prior to authorization for use.

(ii) Rocket motors, Class B explosives, may be shipped in a propulsive state only under conditions approved by the Department of Defense or the National Aeronautics and Space Administration.

(3) Igniters, jet thrust (jato), class B explosives, and igniters, rocket motor, class B explosives, are devices consisting of an electrically operated or remotely controlled ignition element and a fast burning composition which functions by rapid burning rather than detonation, assembled in a unit for use in igniting the propelling charge of jet thrust units, rocket motors, or rocket engines.

(f) Propellant explosives, class B Propellant explosives, class B, are solid or liquid chemicals or chemical mixtures which function by combustion. The combustion is controlled by composition, size, form of grain, or other chemical or mechanical means. Any propellant is class B which fails to detonate in five trials when tested (see Note 2) in the package in which it is offered for shipment. Propellant explosives, class B, include smokeless powder for small arms (see Note 4), smokeless powder for cannon, liquid monopropellant fuel (see Note 3), smokeless powder, or solid propellant explosives for rockets, jet thrust units, or other devices. Black powder is not included in this classification and is defined specifically in §173.53.

(g) Explosives power devices, Class B, are devices designed to operate ejecting apparatus or other mechanisms by means of a propellant explosive, Class B, and differ from explosive power devices, Class C, in that they contain larger or more powerful propellants. The devices must not rupture on functioning and must be of a type examined by the Bureau of Explosives and approved by the Director, OHMT, except as otherwise provided in §173.51(b) and §173.86(a).[1]

Note 1: Fire-extinguisher charges containing not to exceed 50 grains of propellant explosives per unit are exempt from the regulations in Parts 170-189 of this chapter.

Note 2: In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

Note 3: A liquid monopropellant fuel is defined as any propellant in which the fuel and the oxidizer are physically or chemically combined in one form.

Note 4: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car or motor vehicle, except shipments by, for, or to the Department of the Army, Navy, or Air Force of the United States Government, shall be classed as a flammable solid for purposes of transportation when packaged in accordance with § 173.197a.

(h) Starter cartridges, jet engine, class B explosives consist of plastic and/or rubber cases, each containing a pressed cylindrical block of propellant explosive and having in the top of the case a small compartment that incloses an electrical squib, small amounts of black powder, and smokeless powder, which constitutes an igniter. The starter cartridge is used to activate a mechanical starter for jet engines.

(i) Rocket en gine (liquid), class B explosives is a complete, self-contained rocket propulsion unit which contains an oxidizer and a fuel, each separated by an aluminum or stainless steel wall of not less than 0.250 inch thickness. Double walls are permitted. Pressurization of the propellant tanks is by use of a gas generator. The ignition source must be in an unarmed position for shipment. Rocket engines (liquid) are used to propel or provide thrust for rockets, missiles or spacecraft.

Regulations reference in 49 CFR 173.51, 173.53, and 173.88

40 CFR 173.86 New explosives definitions; approval and notification.

(a) As used in this section, "new explosive" means an explosive compound, mixture or device, produced by a person who:

(1) Has not previously produced that explosive compound, mixture or device; or

(2) Has previously produced the explosive compound, mixture or device, but has made a change in the formulation, design, process or production equipment. An explosive compound mixture or device will not be considered a "new explosive" if an agency listed in paragraph (b) of this section has determined and confirmed in writing that there are no significant differences in hazard characteristics from the explosive compound, mixture or device previously approved. The written determination must be submitted to and approved by, the Director, OHMT before the explosive is offered for transportation.

(b) Except as otherwise provided in this section, no person may offer a new explosive for transportation unless:

(1) It has been examined and assigned a recommended shipping description and hazard class by the Bureau of Explosives, Association of American Railroads or the Bureau of Mines, U.S. Department of the Interior and has been classed and approved by the Director, OHMT;

(2) It has been examined, classed, and approved by the U.S. Army Materiel Development and Readiness Command (DRCSF), Naval Sea Systems Command (NAVSEA 06H), or HQUSAF (IGD/SEV) when made by, or under the direction or supervision of, the DOD and tested in accordance with the Explosives Hazard Classification Procedures contained in DOD TB 700-2 (September 1982), (NAVSEAINST 8020.8 AFTO 11A-1-47, DSAR 8220.1) and the approval has been submitted to, and acknowledged by the Director, OHMT; or

(3) It has been examined, classed, and approved by the U.S. Department of Energy (DOE) when made by, or under the direction or supervision of, the DOE and tested in accordance with the Explosives Hazard Classification Procedures contained in DOD TB 700-2 (September 1982) and the approval has been submitted to, and acknowledged in writing by the Director, OHMT.

(c) Each person who offers a new explosive for transportation must file a copy of the approval for the new explosive accompanied by a supporting laboratory report or equivalent data with the Director, OHMT before offering the new explosive for transportation, unless the new explosive is--

(1) Covered under an approval issued by the Director, OHMT;

(2) Being transported under paragraph (d), (e), (f), or (g) of this section; or

(3) A new DOD explosive covered by a security classification.

(d) Notwithstanding paragraph (b) of this section, any person may offer a sample of a new explosive that has not been approved for transportation by railroad, highway, or vessel to a laboratory for examination if:

(1) The new explosive has been assigned a tentative shipping description and class in writing by one of the agencies listed in paragraph (b) of this section;

(2) The sample consists of no more than five pounds of the new explosive;

(3) The new explosive is packaged as required in this part according to the tentative description and class assigned unless otherwise specified in writing by one of the agencies listed in paragraph (b) of this section; and

(4) The package is labeled as required by this subchapter and the following is marked on the package:

(i) The words "SAMPLE FOR LABORATORY EXAMINATION";

(ii) The net weight of the new explosive, and

(iii) The tentative shipping description.

(e) Notwithstanding paragraph (b) of this section, a manufacturer of a new explosive that has not been examined or approved may transport that new explosive from where it was produced to an explosive testing facility if:

(1) The new explosive is not a forbidden explosive or an initiating explosive according to this subchapter;

(2) The new explosive is a compound or mixture it must be described as high explosive or high explosive, liquid, as appropriate (other than when contained in a device) and packed, marked, labeled, and described on the shipping paper as required by this subchapter;

(3) The new explosive is a device it must be assigned a tentative description and class by the owner and packed, marked, labeled, and described on the shipping paper as required by this subchapter based on its tentative description and class;

(4) The new explosive is transported in a motor vehicle operated by the owner of the explosive, and

(5) The new explosive is accompanied by a person, in addition to the driver of the motor vehicle, who is qualified by training and experience to handle the explosive.

(f) Notwithstanding the provisions of paragraph (b) or (d) of this section, the Director, Office of Hazardous Materials Transportation may approve a new explosive on the basis of an approval issued for the explosive by the competent authority of a foreign government, or, when examination of explosives by the Bureau of Explosives or Bureau of Mines is impracticable, on the basis of reports of tests conducted by disinterested third parties, or may approve the transportation of an explosives sample for the purpose of examination by the Bureau of Explosives, of the Bureau of Mines or other government agency.

(g) Notwithstanding the provisions of paragraph (b) of this section, an explosive may be transported under the provisions of §§171.11, 171.12, or 176.11 without the approval of the Director, Office of Hazardous Materials Transportation provided that

the Director, Office of Hazardous Materials Transportation has acknowledged, in writing, the acceptability of an approval issued by the competent authority of a foreign government pursuant to the provisions of the UN Recommendations, the ICAO Technical Instructions, the IMDG Code or other national or international regulations based on the provisions of the UN Recommendations. In such cases, a copy of the approval of the foreign competent authority, and a copy of the written acknowledgement of its acceptability must accompany each shipment of that explosive.

(h) The requirements of this section do not apply to small arms ammunition which is:

(1) Not a forbidden explosive under §173.51;

(2) Ammunition for rifle, pistol, or shotgun;

(3) Ammunition with inert projectile or blank ammunition; and

(4) Ammunition not exceeding 50 caliber for rifle or pistol cartridges or 8 gauge for shotshells.

(i) If experience or other data indicate that the hazard of a material (device) containing an explosive composition is greater or less than indicated according to the definition and criteria specified in §§173.53, **173.86**, and 173.100 of this Part, the Director, OHMT may, following examination in accordance with paragraph (b) of this section, revise its classification or except the material (device) from the requirements of this subchapter.

(j) Fireworks and Novelties. Notwithstanding the provisions of paragraph (b) of this section, Class B and C fireworks and Class C novelties may be classed and approved by the Director, OHMT, without prior examination and offered for transportation, if--

(1) The fireworks or novelty devices are manufactured in accordance with the applicable requirements in APA Standard 87-1;

(2) A thermal stability test is conducted on the device by the BOE, and BOM, or the manufacturer. The test must be performed by maintaining the device, or a representative prototype of a large device such as a display shell, at a temperature of 167 degrees F. (75 degrees C.) for 48 consecutive hours. When a device contains more than one component, those components which could be in physical contact with each other in the finished device must be placed in contact with each other during the thermal stability test;

(3) The manufacturer applies in writing to the Director, OHMT, following the applicable requirements in APA Standard 87-1, and is notified in writing by the Director, OHMT, that the fireworks or novelty device has been classed, approved, and assigned an EX-number. Each application must be complete, include all relevant background data and copies of all applicable drawings, test results, and any other pertinent information on each device for which approval is being requested. The manufacturer must sign the application and certify that the device for which approval is requested conforms to APA Standard 87-1 and that the descriptions and technical information contained in the application are complete and accurate. If the application is denied, the manufacturer is notified in writing of the reasons for the denial. The Director, OHMT, may require that the fireworks or novelty be examined by an agency listed in paragraph (b)(1) of this section; and

(4) When offered for transportation, each package containing approved fireworks or novelties is marked with the EX-number for each device therein, except that when more than five different fireworks or novelty devices are packed in the same package, the package need not be marked with more than five of the EX-numbers.

49 CFR 177.822 Acceptable articles.

(b) Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, other than as defined in §173.53(e) of this subchapter, may be transported only by motor carriers other than common carriers in containers complying with specification MC200 (§178.351 of this subchapter). No form of trailer may be attached.

14 CFR 108.11 Carriage of weapons.

(a) No certificate holder required to conduct screening under a security program may permit any person to have, nor may any person have, on or about his or her person or property, a deadly or dangerous weapon, either concealed or unconcealed, accessible to him or her while aboard an airplane for which screening is required unless:

(1) The person having the weapon is--

(i) An official or employee of the United States, or a State or political subdivision of a State, or of a municipality who is authorized by his or her agency to have the weapon; or

(ii) Authorized to have the weapon by the certificate holder and the Administrator and has successfully completed a course of training in the use of firearms acceptable to the Administrator.

(2) The person having the weapon needs to have the weapon accessible in connection with the performance of his or her duty from the time he or she would otherwise check it in accordance with paragraph (d) of this section until the time it would be returned after deplaning.

(3) The certificate holder is notified--

(i) Of the flight on which the armed person intends to have the weapon accessible to him or her at least 1 hour, or in an emergency as soon as practicable, before departure; and

(ii) When the armed person is other than an employee or official of the United States, that there is a need for the weapon to be accessible to the armed person in connection with the performance of that person's duty from the time he or she would otherwise check it in accordance with paragraph (d) of this section until the time it would be returned to him or her after deplaning.

(4) The armed person identifies himself or herself to the certificate holder by presenting credentials that include his or her clear, full-face picture, his or her signature, and the signature of the authorizing official of his or her service or the official seal of his or her service. A badge, shield, or similar device may not be used as the sole means of identification.

(5) The certificate holder--

(i) Ensures that the armed person is familiar with its procedures for carrying a deadly or dangerous weapon aboard its airplane before the time the person boards the airplane;

(ii) Ensures that the identity of the armed person is known to each law enforcement officer and each employee of the certificate holder responsible for security during the boarding of the airplane; and

(iii) Notifies the pilot in command, other appropriate crewmembers, and any other person authorized to have a weapon accessible to him or her aboard the airplane of the location of each authorized armed person aboard the airplane.

(b) No person may, while on board an airplane operated by a certificate holder for which screening is not conducted, carry on or about that person a deadly or dangerous weapon, either concealed or unconcealed. This paragraph does not apply to--

(1) Officials or employees of a municipality or a State, or of the United States, who are authorized to carry arms; or

(2) Crewmembers and other persons authorized by the certificate holder to carry arms.

(c) No certificate holder may knowingly permit any person to transport, nor may any person transport or tender for transport, any explosive, incendiary, or a loaded firearm in checked baggage aboard an airplane. For the purpose of this section, a loaded firearm means a firearm which has a live round of ammunition, cartridge, detonator, or powder in the chamber or in a clip, magazine, or cylinder inserted in it.

(d) No certificate holder may knowingly permit any person to transport, nor may any person transport or tender for transport, any unloaded firearm in checked baggage aboard an airplane unless--

(1) The passenger declares to the certificate holder, either orally or in writing before checking the baggage, that any firearm carried in the baggage is unloaded;

(2) The firearm is carried in a container the certificate holder considers appropriate for air transportation;

(3) When the firearm is other than a shotgun, rifle, or other firearm normally fired from the shoulder position, the baggage in which it is carried is locked, and only the passenger checking the baggage retains the key or combination; and

(4) The baggage containing the firearm is carried in an area, other than the flightcrew compartment, that is inaccessible to passengers.

(e) No certificate holder may serve any alcoholic beverage to a person having a deadly or dangerous weapon accessible to him or her nor may such person drink any alcoholic beverage while aboard an airplane operated by the certificate holder.

(f) Paragraphs (a), (b), and (d) of this section do not apply to the carriage of firearms aboard air carrier flights conducted for the military forces of the Government of the United States when the total cabin load of the airplane is under exclusive use by those military forces if the following conditions are met:

(1) No firearm is loaded and all bolts to such firearms are locked in the open position; and

(2) The certificate holder is notified by the unit commander or officer in charge of the flight before boarding that weapons will be carried aboard the aircraft.

49 CFR 173.100 Definition of Class C explosives.

(y) Smoke candles, smokepots, smoke grenades, smoke signals, signal flares, hand signal devices, and very signal cartridges are devices designed to produce visible effects for signal purposes. These devices must contain no bursting charges and no more than 200 grams of pyrotechnic composition each (see Note 1), exclusive of smoke composition (see Note 2), unless greater weight of composition is examined by the Bureau of Explosives and approved by the Director, OHMT.

Note 1: Pyrotechnic compositions (other than smoke compositions) are defined as chemical mixtures which on burning and without explosion, produce visible or brilliant displays or bright lights.

Note 2: Pyrotechnic smoke compositions are defined as chemical smoke producing mixtures, which on ignition burn at a controlled rate, without the production of flame and without the build-up of internal pressure that would rupture or burst the end product.

49 CFR 173.330 Chemical ammunition.

(a) Projectiles, shells, bombs, and grenades containing Poison A materials but not equipped or packaged with ignition elements, bursting charges, detonating fuzes, or explosive components, may be shipped only by, for, or to the Department of Defense. Each shipment must be packaged, marked, and labeled as required by their regulations. Each package must be labeled with POISON GAS label marked "NONEXPLOSIVE" and also marked with the proper shipping name. (See §§173.53(r) and 173.59 for explosive chemical ammunition.)

(b) Chemical ammunition containing poisonous liquids or gases, class A, must not be offered for transportation by rail express.

49 CFR 173.350 Chemical ammunition.

(a) Chemical ammunition consisting of projectiles, shells, bombs, grenades and other containers filled with Poison B materials, without ignition elements, bursting charges, detonating fuzes, or other explosive components, must be packed for shipment in strong outside wooden or metal boxes. Boxes must be marked with proper shipping name and labeled as prescribed by this Part for gases, liquids, or chemicals contained therein.

(b) Chemical ammunition, when shipped as such, must not be equipped or packed with explosive or ignition elements. (See §§173.53(r) and 173.59 for explosive chemical ammunition.)

49 CFR 173.385 Tear gas grenades, tear gas candles, or similar devices.

(a) Tear gas grenades, tear gas candles, or similar devices containing lachrymatory (tear producing) substances, for civil or military use must be packed in specification containers as follows (see §173.101(d) and (e) for packing tear gas cartridges):

(1) Specification 15A, 15B, 15C, or 19B (§§178.168, 178.169, 178.170, 178.191 of this subchapter). Metalstrapped wooden boxes. Functioning elements not assembled in grenades or devices must be in a separate compartment of these boxes, or in inside or separate outside boxes, Spec. 15A, 15B, 15C, or 19B and must be so packed and cushioned that they may not come in contact with each other or with the walls of box during transportation. Not more than 50 grenades and 50 functioning devices shall be packed in one box and the gross weight of the outside box must not exceed 75 pounds.

(2) Spec. 37A (§178.131 of this subchapter). Metal drum (single-trip). Functioning elements must be packed in separate compartment. Not more than 24 grenades and 24 functioning devices shall be packed in one outside container and the gross weight of the container must not exceed 75 pounds.

(3) Specification 12B (§178.205 of this subchapter). Fiberboard box with inside tear gas devices meeting specifications 2P or 2Q (§§178.33, 178.33a of this subchapter). Each inside container must be placed into spiral wound tubes fitted with metal ends or a double-faced fiberboard box with suitable padding. Not more than 30 inside containers shall be placed in one outside box and gross weight shall not exceed 35 pounds.

(b) These articles may not be assembled with or packed in the same compartment with mechanically or manually operated firing, igniting, bursting, or other functioning elements, unless of a type or design examined by the Bureau of Explosives and approved by the Director, OHMT.

(c) No shipment of packages containing articles under this section may be made until samples thereof have been examined by the Bureau of Explosives, or examined under their supervision, and approved by the Director, OHMT.

49 CFR 173.100 Definition of Class C explosives.

(gg) Detonators (§173.53(g)(1)), which will undergo only limited propagation in the shipping package, are classed as Class C explosives. For the purposes of this paragraph, limited propagation means that if one detonator near the center of a shipping package is exploded, the aggregate weight of explosives, excluding ignition and delay charges, in this and all additional detonators in the outside packaging that explode may not exceed 25 grams. Detonators which mass detonate in the shipping package may not be classed as Class C explosives. For the purposes of this paragraph "mass detonate" means that more than 90 percent of the devices tested in a package explode practically simultaneously.

[1] **49 CFR 173.100** Definition of Class C explosives.

(hh) Detonating primers (§173.53(g)(2)) in which the total explosive charge per unit does not exceed 25 grams, and which will undergo only limited propagation in the shipping package, are classed as Class C explosives. For the purposes of this paragraph, limited propagation means that if one detonating primer near the center of a shipping package is exploded, the aggregate weight of explosives, excluding ignition and delay charges, in this and all additional detonating primers in the outside packaging that explode may not exceed 25 grams. Detonating primers which mass detonate in the shipping package may not be classed as Class C explosives. For the purposes of this paragraph, "mass detonate" means that more than 90 percent of the devices tested in a package explode practically simultaneously.

[1] **49 CFR 173.60** Black powder and low explosives.

(a) Black powder and low explosives must be packed in containers complying with the following specifications:

(1) Specification 13 (§178.140 of this subchapter). Metal kegs, not less than 7 inches long. Net weight not less than 6¼ pounds nor more than 150 pounds.

(2) -(3) [Reserved]

(4) Specification 14, 15A, 16A, or 19B (§178.165, §178.168, §178.185, or §178.191 of this subchapter). Wooden boxes with inside fiber or metal containers not over 1½ pounds capacity each, or cotton bags of at least 4 ounce cotton duck not over 25 pounds capacity each. The gross weight of Specification 14 boxes may not exceed 140 pounds and the gross weight of Specification 15A or 16A boxes may not exceed 200 pounds.

(5) Spec. 14, 15A, 16A, or 19B (§178.165, §178.168, §178.185, or §178.191 of this subchapter). Wooden boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Boxes must be completely lined with strong paraffined paper or other suitable waterproofed material without joints or other openings at the bottom or sides. Authorized gross weight not to exceed 75 pounds.

(6) Spec. 12H, 23F, or 23H (§§178.209, 178.214, or 178.219 of this subchapter). Fiberboard boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized

only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Authorized gross weight not to exceed 65 pounds.

(b) Black powder (not low explosives) in addition to containers specified in paragraph (a) of this section, must be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§178.165, §178.168, §178.185, or §178.191 of this subchapter). Wooden boxes with inside containers which must be cloth or paper bags of capacity not exceeding 25 pounds net weight, provided the completed shipping package shall be capable of standing a drop of 4 feet without rupture of inner or outer containers. The completed package must not exceed 50 pounds, net weight of black powder.

(2) Spec. 12H, 23F, or 23H (§178.209, 178.214, or 178.219 of this subchapter). Fiberboard boxes with inside containers which must be cloth, paper, or securely closed polyethylene bags constructed of material not less than 0.004 inch thick of capacity not exceeding 25 pounds net weight for cloth or paper bags and not exceeding 50 pounds net weight for polyethylene bags, or inside fiber or metal containers having not over 1 pound capacity each, provided the completed shipping package shall be capable of withstanding a drop of 4 feet without rupture of inner or outer containers. The tubes of the box may be eliminated and a single tube as specified in spec. 23F (§178.214 of this subchapter) may be substituted. The completed package shall not contain more than 50 pounds net weight of black powder.

(3) Spec. 17E (§178.116 of this subchapter). Metal drums (single-trip), not over 5 gallons capacity each, without opening except bunghole not exceeding 2.3 inches in diameter. Authorized for carload or truckload shipments only.

(c) Black pellet powder primed with an electric squib secured inside the coaxial hole of the pellet powder with loose ends of the wires of the squib effectively short-circuited may be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§178.165, §178.168, §178.185, or §178.191 of this subchapter). Wooden boxes with inside cartridges which must be strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Boxes must be lined as prescribed for cylindrical fiber cartridges. Gross weight not to exceed 65 pounds.

(d) Low explosives (not black powder) may in addition to the containers specified in paragraph (a) of this section, be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, 16A, or 19B (§178.165, §178.168, §178.185, or §178.191 of this subchapter). Wooden boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight of spec. 14 box must not exceed 140 pounds. Gross weight of spec. 15A or 16A box must not exceed 200 pounds.

(2) Spec. 12H, 23F, or 23H (§178.209, §178.214 or §178.219 of this subchapter). Fiberboard boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight must not exceed 65 pounds.

(3) Spec. 15A, or 19B (§§178.168, 178.191 of this subchapter). Wooden boxes, lined, spec. 2L (§178.30 of this subchapter). Authorized only for low explosives in the form of hard nonplastic rods or cylinders not less than ⅝-inch diameter.

(e) Each outside package must be plainly marked, stamped, or stenciled "BLACK POWDER" or "LOW EXPLOSIVES," and may also show "BLASTING," "RIFLE," etc., as "BLACK BLASTING POWDER," "BLACK RIFLE POWDER," "LOW BLASTING EXPLOSIVE" or "BLACK PELLET POWDER," as the case may be.

(1) Inside containers of over 1½ pounds capacity each in boxes, must be packed with filling holes up, and the boxes must be marked on top "THIS SIDE UP."

49 CFR 173.100 Definition of Class C explosives.

(r) Common fireworks are devices suitable for use by the public and designed primarily to produce visible or audible effects, or both visible and audible effects, by combustion. No component of the device which produces or is intended to produce an audible effect (other than a whistle) shall contain pyrotechnic composition in excess of 2 grains in weight; nor shall such device or component, upon functioning, project or disperse any dangerous fragments such as metal, glass, or brittle plastic. See also definitions and standards found in APA Standard 87-1.