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Thursday  
March 5, 1998

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**Part V**

**Environmental  
Protection Agency**

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**40 CFR Part 82**

**Protection of Stratospheric Ozone:  
Manufacture of Halon Blends, Intentional  
Release of Halon, Technician Training  
and Disposal of Halon and Halon-  
Containing Equipment; Final Rule**

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 82**

[FRL-5974-1]

RIN 2060-AH44

**Protection of Stratospheric Ozone: Manufacture of Halon Blends, Intentional Release of Halon, Technician Training and Disposal of Halon and Halon-Containing Equipment**

**AGENCY:** Environmental Protection Agency.

**ACTION:** Final rule.

**SUMMARY:** This final rule bans the manufacture of halon blends; prohibits the intentional release of halons during training of technicians and during testing, repair, and disposal of halon-containing equipment; requires appropriate training of technicians regarding emissions reduction; and requires proper disposal of halon and of halon-containing equipment. Release of halons to the environment contributes significantly to the depletion of the stratospheric ozone layer which, in turn, can lead to increased incidences of skin cancer and other ill effects. EPA proposed these requirements in response to a lawsuit filed by the Sierra Club. EPA understands that the manufacturers which have in recent years been engaged in the manufacture of halon blends will be minimally impacted by the ban, or may meet criteria for exemption from this ban. Furthermore, EPA understands that entities using halons, driven in part by the economic value of halons, currently widely practice the kinds of precautions codified in this rule. This rule will more fully extend these practices throughout the industry and will ensure their continued implementation in the event of changes in halon market conditions. Thus, this rule will assure continued significant environmental benefits, while placing only minimal burdens on industry.

**EFFECTIVE DATE:** April 6, 1998.

**ADDRESSES:** Comments and materials supporting this rulemaking are contained in Public Docket No. A-98-02 at: U.S. Environmental Protection Agency, 401 M Street SW, Washington, D.C. 20460. The Public Docket is located in Room M-1500, Waterside Mall (Ground Floor). Dockets may be inspected from 8 a.m. until 12 noon, and from 1:30 p.m. until 3 p.m., Monday through Friday. A reasonable fee may be charged for copying docket materials.

**FOR FURTHER INFORMATION CONTACT:** Lisa Chang, Program Implementation Branch, Stratospheric Protection Division, Office of Atmospheric Programs, Office of Air and Radiation, Mail Code 6205J, 401 M Street SW, Washington, D.C. 20460, 202/564-9742.

**SUPPLEMENTARY INFORMATION:** The contents of today's preamble are listed in the following outline:

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**I. Regulated Entities**

Entities potentially regulated by this action are those that manufacture halon blends, owners of halon-containing equipment, and persons who test, repair, or dispose of total flooding systems or hand-held fire extinguishers or who employ technicians to service such equipment. Other entities potentially impacted by the prohibition of the intentional release of halons during technician training and during testing, repair, and disposal of equipment are U.S. military institutions. Regulated categories and entities include:

Category	Examples of regulated entities
Industry .....	Manufacturers of halon blends; owners of halon-containing equipment; persons who test, maintain, service, repair, or dispose of halon-containing equipment, who employ technicians to perform such services, or who use such equipment for technician training.
Military .....	Military entities that dispose of halon-containing equipment, that employ technicians who service halon-containing equipment, or that release halons during technician training or during testing, repair, or disposal of equipment.

This table is not intended to be exhaustive, but rather provides a guide

for readers regarding entities likely to be regulated by this action. This table lists

the types of entities that EPA is now aware could potentially be affected. To

determine whether your company is regulated by this action, you should carefully examine the applicability criteria discussed below. If you have questions regarding the applicability of this action to a particular entity, consult the person listed in the preceding **FOR FURTHER INFORMATION CONTACT** section.

## II. Background

### a. Stratospheric Protection

The stratospheric ozone layer protects the Earth from penetration of harmful ultraviolet (UV-B) radiation. National and international consensus exists that releases of certain man-made halocarbons, including chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methyl chloroform, and methyl bromide contribute to the depletion of the stratospheric ozone layer and should be controlled. Ozone depletion harms human health and the environment through increased incidence of certain skin cancers and cataracts, suppression of the immune system, damage to plants including crops and aquatic organisms, increased formation of ground-level ozone and increased weathering of outdoor plastics. Ozone-depleting substances have been designated as either class I or class II substances (see 40 CFR part 82, appendices A and B to subpart A). Class I substances include chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform, methyl bromide and hydrobromofluorocarbons; class II substances include hydrochlorofluorocarbons. Halon is commonly used in fire suppression. Halon blends consisting of halon 1211 and halon 1301 were once widely manufactured for use in hand-held portable extinguishers and aerosol containers. However, since January 1, 1994, in accordance with the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), halon production in, and importation of virgin halon into the U.S. has been prohibited (40 CFR 82.4(b), 82.7; 58 FR 65018). There are limited exceptions to this ban for production for export to countries covered under Article V of the Montreal Protocol (Section 82.9(a)(1)); production/import for essential uses (Section 82.4(r)); and production using destruction/transformation credits under Section 82.9(f) (for persons nominated for essential use exemptions only).

### b. Section 608(a) of the Clean Air Act

Section 608 of the Clean Air Act Amendments of 1990 ("the Act" or "CAA") requires EPA to establish a

comprehensive program to limit emissions of ozone-depleting substances during their use and disposal.

Section 608(a) requires EPA to promulgate regulations "establishing standards and requirements regarding the use and disposal" of both class I and class II substances. The regulations are to "reduce the use and emission of such substances to the lowest achievable level" and to "maximize the recapture and recycling of such substances."

On May 14, 1993, EPA promulgated regulations under section 608(a) of the Act, establishing standards and requirements for the use and disposal of class I and II substances during the servicing, repair and disposal of air-conditioning and refrigeration equipment (58 FR 28660). Statutory authority for today's proposal is found in section 608(a)(2) of the Act, which directs EPA to establish standards and requirements regarding use and disposal of class I and II substances other than refrigerants. Section 608(a)(2) requires EPA to promulgate additional regulations that establish standards and requirements regarding the use and disposal of both class I and class II substances not covered by the initial set of regulations, i.e., non-refrigerant uses of class I and class II substances.

The goal of subsection 608(a) is to reduce the use and emission of ozone-depleting substances to the lowest achievable level and maximize the recapture and recycling of such substances. Today's requirements regarding disposal of halon-containing equipment and technician training, together with the bans on the manufacture of halon blends and the intentional release of halon during repair, testing, and disposal of equipment, and during technician training, are designed to meet the intent of section 608(a) by reducing potential emissions of halon, a significant ozone depleter.

### c. Sierra Club Suit

On March 31, 1995, the Sierra Club filed a complaint against EPA, claiming that EPA had not met the requirements of section 608(a)(2) of the Act by taking regulatory steps to minimize use and emissions of ozone-depleting substances other than refrigerants. This action resulted in negotiations between EPA and the Sierra Club that led to a consent decree of which notice was published on September 17, 1996, in the **Federal Register** (61 FR 48950). In the consent decree, EPA agreed to take the following actions with regard to halons: (1) To issue a proposed rule regarding a ban of the sale of all halon blends and to take final action on the proposal; (2) to issue

a proposed rule or rules regarding the intentional release of halons during repair and testing of equipment containing halons; training concerning the use of such equipment; disposal of halons; and removal or disposal of equipment containing halons at the end of the life of such equipment; and to take final action on the proposal; and (3) to issue either a proposed rule requiring the certification of recycling and recovery equipment for halons and allowing the removal of halons only through use of certified equipment or a direct final determination that no such rule is necessary or appropriate; and to take final action if a proposal is issued or if adverse comment is received on the direct final determination. EPA will address the third of these commitments in a separate action from today's.

### d. Halons

Halons are gaseous or easily vaporized halocarbons used primarily for putting out fires, but also for explosion protection. The two halons most widely used in the United States are Halon 1211 and Halon 1301. Halon 1211 is used primarily in streaming applications and Halon 1301 is typically used in total flooding applications. Some limited use of Halon 2402 also exists in the United States, but only as an extinguishant in engine nacelles (the streamlined enclosure surrounding the engine) on older aircraft and in the guidance system of Minuteman missiles. Today's action is not expected to affect the supply of unblended halons for these important uses.

Halons are used in a wide range of fire protection applications because they combine four characteristics. First, they are highly effective against solid, liquid/gaseous, and electrical fires (referred to as Class A, B, and C fires, respectively). Second, they dissipate rapidly, leaving no residue, and thereby avoid secondary damage to the property they are protecting. Third, halons do not conduct electricity and can be used in areas containing live electrical equipment where they can penetrate to and around physical objects to extinguish fires in otherwise inaccessible areas. Finally, halons are generally safe for limited human exposure when used with proper exposure controls.

Despite these advantages, halons are among the most ozone-depleting chemicals in use today. With 0.2 ozone-depleting potential (ODP) representing the threshold for classification as a class I substance, Halon 1301 has an estimated ODP of 10; Halon 1211 has an estimated ODP of 3. Thus, while total halon production (measured in metric tons) comprised just 2 percent of the

total production of class I substances in 1986, halons represented 23 percent of the total estimated ozone depletion attributable to class I substances produced during that year.

Prior to the early 1990's, the greatest releases of halon into the atmosphere occurred not in extinguishing fires, but during testing and training, service and repair, and accidental discharges. Data generated as part of the Montreal Protocol's technology assessment indicated that only 15 percent of annual Halon 1211 emissions and 18 percent of annual Halon 1301 emissions occur as a result of use to extinguish actual fires. These figures indicated that significant gains could be made in protecting the ozone layer by revising testing and training procedures and by limiting unnecessary discharges through better detection and dispensing systems for halon and halon alternatives. The fire protection community began to conserve halon reserves in response to the impending ban of the production and import of halons 1211, 1301, and 2402 that occurred January 1, 1994. Through standards, research, and field practice, the fire protection community eliminated most discharge testing with halons and minimized use of halon for testing and training. Additionally, fire equipment distributors began to service and maintain fire suppression equipment regularly to avoid leaks, false discharges, and other unnecessary emissions.

#### *e. Notice of Proposed Rulemaking*

On July 7, 1997, EPA issued a notice of proposed rulemaking proposing several actions relative to the sale and emission of halon as mandated by the Sierra Club consent decree (62 FR 36428). First, EPA proposed to ban the sale of halon blends. The proposed ban did not affect the sale of unblended halons.

Second, EPA proposed a ban on the intentional release of halons during repair, testing, and disposal of equipment that contains halon and during technician training. For safety reasons, EPA proposed to grant an exemption from this ban for halon release used as part of the test of fire extinguishing systems in class C and class D compartments aboard aircraft when such a test is required by the Federal Aviation Administration (FAA) under its Airworthiness Standards.

Third, EPA proposed to require halon equipment service companies, halon recyclers, halon equipment manufacturers, and other organizations that employ technicians who service halon-containing equipment to provide training regarding halon emission

reduction during the servicing of halon-containing equipment.

Finally, EPA proposed to require owners of equipment containing halon to dispose of this equipment by returning the halon-containing equipment to the manufacturer, a fire equipment distributor or halon recycler for halon recovery. EPA also proposed to require persons disposing of halon to send it to a halon recycler.

The proposed action was consistent with the provisions in the consent decree agreed to by EPA and the Sierra Club, which obligate EPA to take certain actions in regard to the requirements contained in section 608(a)(2) of the CAA. EPA developed the provisions of the proposal with input from representatives of the halon industry, fire protection community, environmental groups and affected trade associations. Since the halon industry has successfully been making significant strides towards reducing halon emission through the use of technician training and efficient halon removal and disposal practices for halon-containing equipment, EPA believed that the proposal generally reflected existing industry standards and practices. EPA had also understood that only one manufacturer of halon blends existed and that entity claimed it would be willing to end its minimal production of halon blends. As a result, EPA also believed that the proposal would not significantly impact members of the fire protection community.

### **III. Today's Action**

#### *a. Summary of Major Public Comments*

EPA received a total of 25 written comments on the proposed rule during the 30-day public comment period. These comments are contained in Docket A-98-02. EPA also received supplementary materials from some commenters clarifying or elaborating on issues raised in their comments. These materials are also contained in Docket A-98-02. Several commenters requested exemptions from two of the chief provisions of the proposed rule (the ban on the sale of halon blends, and the ban on intentional releases of halons during testing). Many commenters requested important clarifications of terms used in the proposed rule or clarifications of the intended scope of certain provisions. Numerous requests for minor clarifications were received. Comments were also received to the effect that some of the major provisions of the rule were unnecessary as the practices they required had already been instituted. In addition, numerous commenters from industries using halons in fire

extinguishing systems, from the halon recycling industry, and from other parties, expressed support and commendation for the purpose and intent of the rule.

#### *b. Responses to Public Comments*

##### **1. Banning the Manufacture of Halon Blends**

The proposed ban on the sale of halon blends was expected to reduce the use of such blends in accordance with section 608(a)(3) of the Act by preventing newly manufactured blends from being introduced into the marketplace.

Halon blends are extremely effective fire suppression agents primarily used in portable fire extinguishers and also in some total flooding fire extinguisher systems. Although the market for these blends is small, the inability to recycle and reuse halon blends economically represents a significant environmental risk. Recycled halon is necessary to bridge the gap between the end of halon production in 1994 and the commercial availability of replacements, and to provide for critical uses for which satisfactory substitutes or alternative fire protection measures cannot be found. Prior to the 1994 ban on the production of halons, the Halon Alternatives Research Corporation (HARC) helped to sponsor a study on issues related to halon recycling and the establishment of a national recycling program. This program included the creation of a national halon bank. Currently, this halon bank brokers transfers of halon between users and may eventually arrange for storage facilities to accommodate fluctuations in supply and demand of halon. Halon blends can be recycled adequately, but only at significant cost. Therefore, halon blends are not commonly recycled or forwarded to a halon bank for critical uses.

Portable halon fire extinguishers are sold, distributed, installed, and maintained by fire equipment dealers and distributors; accidental release and leakage can be reduced through regular maintenance by the distributor. Fire extinguishers that contain halon blends can be returned to equipment dealers or recyclers for halon recovery but generally not for halon recycling. The proposed ban on the sale of halon blends was designed to prevent the development of a widely distributed pool of complex halon mixtures which could not readily be recycled. As stated earlier, such a pool represents a significant environmental risk because the costs of recycling are very high. Members of the halon recycling

industry, contacted during EPA research for the drafting of the proposed and final rule stated that, while technically feasible, halon blend recycling capacity does not currently exist as a conventional, commercially available option for halon product users. EPA has learned of a single exception where the manufacturer of fire extinguishing equipment which employs a halon blend extinguishing agent recovers halon blends both from portable fire extinguishers as well as its own decommissioned units and purportedly separates the individual halons solely for reuse in its units. However, the overwhelming majority of the estimated hundreds to thousands of entities engaged in halon recycling have not invested in the fractional distillation technology necessary to separate and reclaim halon blends because the halon blend market has been deemed so small that recycling halon blends has been held to be unprofitable. Thus, the ability to recycle halon blends is generally not commercially available.

It could be argued that if the market value for unblended halons declines, unblended halons as well may be widely distributed, with little economic incentive for their recovery and recycling. However, a critical difference between the halon blend and unblended halon situations is that with respect to unblended halons, an extensively developed recovery and recycling infrastructure exists, with a history of proven effectiveness in coordinating environmentally responsible halon management. No such community or history has been established with respect to halon blends.

Furthermore, EPA believes that there is only one other U.S. manufacturer currently producing halon blends. EPA had contacted this manufacturer to determine the impact, if any, a ban of the sale of all halon blends may have on this manufacturer. This manufacturer claimed that halon blends represent less than 2% of its business and that a ban on the sale of halon blends would minimally impact this organization's profitability. Furthermore, this manufacturer stated that because the fire protection community has made considerable progress in identifying and using alternatives or unblended halons that use nitrogen as a propellant, consumer demand for halon blend extinguishers and aerosol containers has already been significantly reduced. Thus, EPA believes that a ban on the manufacture of halon blends is necessary to avert the environmental risk associated with the lack of availability of halon blend recycling capability, described above, and will

generally have minimal impact on manufacturers, distributors or consumers.

(i) *Support for the ban on the new manufacture of halon blends.* A major association of halon users, recyclers, equipment manufacturers, and distributors expressed support for the intent of the ban on the sale of halon blends, stating that "the blending of halons makes them difficult to separate, removes them from normal recycling channels, and decreases the supply of recycled halon available to meet critical fire/explosion protection needs. The responsible management of the existing halon supply (bank) is critical to achieving a successful transition from halons to alternative agents".

(ii) *Change from a ban on the sale to a ban on the manufacture of halon blends.* Comments received regarding this prohibition have led EPA to change the language of the prohibition from a ban on the sale to a ban on the manufacture of halon blends. EPA believes this change clarifies the scope of the prohibition, and is more strictly consistent with the intent of the prohibition, as discussed more fully below.

Two commenters inquired whether the ban on the sale of halon blends applied to pre-existing stores of halon blends, and requested that this be clarified in the rule. Pre-existing stores might include halon blends contained in previously manufactured portable fire extinguishers.

The intent of the ban, as stated in the previous section, was to prevent newly manufactured blends from being introduced into the marketplace, and was not intended to affect pre-existing stocks of blends. EPA concurs with the need, indicated by the above comments, to clarify the scope of the ban, and believes that modifying the ban to apply to the new manufacture of halon blends clarifies that the ban does not prohibit transactions involving existing stores of blends. This modification does not diminish the environmental benefit of the ban, as releases of existing halon blends would have equal environmental impacts, regardless of the ownership of the blends.

(iii) *Clarification of terms "Halon," "Halon product," and "Halon blend."* Several commenters requested that the terms "halon," "halon product," and "halon blend" be clarified. A chief complaint was that although in the Preamble, it was stated that the term "halon" referred only to the three common Halons (Halon 1211, 1301, and 2402), this was nowhere made explicit in the rule; as a result, "halon" could be taken to mean any halogenated

hydrocarbon. Furthermore, it was pointed out that although "halon blend" was defined in the Preamble as a blend of two or more "halon products," the latter term was also not explicitly defined in the rule itself.

With respect to the first point, EPA recognizes that the term "halon" can have a much broader scope.<sup>1</sup> Today's rule, however, is issued under the authority of Section 608 of the CAA, which concerns Class I and Class II substances. Halons 1211, 1301, and 2402 and their isomers are the only halons listed as ODSs in the CAA or in EPA's implementing regulations (see CAA section 602(a) and 40 CFR Part 82, Subpart A, App. A). Therefore, this rule applies only to Halons 1211, 1301, and 2402. The term "halon product" refers to any mixture or combination of substances which contains only one halon; e.g., the common fire extinguishing mixture of Halon 1301 plus dinitrogen (N<sub>2</sub>) gas. Definitions of the terms "halon", "halon product", and "halon blend" have been added to the final rule.

(iv) *Exemptions from ban on manufacture of halon blends.* Two commenters requested an exemption from the ban on the sale (now the ban on manufacture) of halon blends for a specific product—a patented fire extinguishing agent containing, among other substances, both Halon 1211 and Halon 1301. One of these commenters is the sole licensee of the product, the other is the sole distributor. The principal basis for their request for an exemption revolves around two points. The companies propose that their product is more "environmentally friendly" relative to other halon-containing fire extinguishing products; for example, they assert that the fire extinguishing capacity of their halon product is equivalent to approximately four times as much of other commercially available, unblended halon products used in comparable fire extinguishing equipment. As a result, they assert, (a) smaller quantities of halons are employed in fire extinguishing, thus releasing less halon to the atmosphere, and (b) their fire extinguishing systems are relatively lightweight, making them highly attractive to the aviation industry. Second, the companies assert that their

<sup>1</sup> "Halon" is an abbreviation for "halogenated hydrocarbon" coined by the U.S. Army Corps of Engineers. Halon nomenclature follows the following rule: if a hydrocarbon compound contains the elements C, F, Cl, Br, I, etc., it is designated as Halon abcde (terminal zeros are dropped). Thus, Halon 1211 is chlorobromodifluoromethane, etc. (Gann, 1975).

fire extinguishing agent can be adequately recycled.

In evaluating this request for exemption, EPA held discussions with the companies requesting the exemption; with the Federal Aviation Administration (FAA), as well as members of the aviation industry; with technical experts listed as references by the companies requesting the exemption; and with other halon recycling industry and government technical experts.

Because the industry as a whole is not ready to accommodate halon blend recycling, as discussed in detail in a previous section, EPA cannot abandon the proposed ban on the manufacture of halon blends. However, in consideration of the possible safety, health, and environmental advantages that this product may bring to the aviation community, as suggested in supporting material provided by the commenters to EPA, and as expressed to EPA by members, including federal authorities, within the aviation community; and in consideration of evidence received by EPA suggesting the manufacturer's technical ability to adequately recycle this specific product, EPA is creating an exemption to the ban on the manufacture of halon blends solely for aviation applications provided that (1) the manufacturer or its designee is capable of recycling the blend to the relevant industry standards for the chemical purity of each individual halon, (2) the manufacturer includes in all sales contracts for blends produced by it on or after April 6, 1998 the provision that the blend must be returned to it or its designee for recycling, and (3) the manufacturer or its designee in fact recycles blends produced by the manufacturer on or after April 6, 1998 and returned to it for recycling to the relevant industry standards for the chemical purity of each individual halon. Section 82.270(a) has been modified to reflect this exemption.

## 2. Intentional Release of Halons

EPA proposed banning the intentional release of halons (including halon blends) during technician training and during testing, repair and disposal of halon-containing equipment, and requiring technician training regarding halon emission reduction. Historically, the greatest release of halon into the atmosphere used to occur during testing and training, service and repair, and accidental discharges. However, emissions from Halon 1211 and Halon 1301 applications have decreased substantially over the last five years due to a change in industry practices

concerning the release of halon as outlined in the National Fire Protection Association (NFPA) Technical Standards (NFPA 12A) and Underwriters Laboratories (UL) 1058. These standards require proper leak testing and prohibit the release of halon during system testing.

(i) *Clarification of meaning of "intentional releases"*. One commenter stated that the ban on releases during testing, maintaining, servicing, repairing, or disposing of halon-containing equipment, or during the use of such equipment for technician training, could be taken to mean that releases for the purposes of extinguishing fires and inerting and suppressing explosions are also prohibited.

EPA recognizes that halons are still used in many fire extinguishing and explosion inerting/suppressing applications; halons' value in these applications supports the current active market for recycled halons. It is not EPA's intent to affect halon usage for these purposes. Section 82.270(b)(6) has been added to make this clarification.

(ii) *Clarification of meaning of "de minimis releases"*. One major federal agency commenter requested clarification of the "de minimis" provision in section 82.270(b) of the proposed rule. As proposed, a *de minimis* release (i.e., a very small or trifling release) associated with a good faith attempt to recycle or recover halon is exempt from the prohibition on intentional halon releases during testing, maintenance, servicing, repair, or disposal of halon-containing equipment and during technician training.

There are several types of halon-containing equipment: (1) total flooding fire extinguishing systems, and (2) other types of halon-containing equipment, including halon-containing gas cylinders and portable fire extinguishers. Total flooding systems are generally designed to fully discharge their contents upon being activated. These systems are therefore either full or empty (unless their content is altered due to a leak). After discharge of a total flooding system, the content of the halon container is generally reduced to atmospheric pressure, and a negligibly small amount of halon vapor, compared to the initial mass, remains. A fully discharged total flooding system therefore can reasonably be considered to be empty, and release of the residual halon vapor contained within can be considered a *de minimis* release. Section 82.270(b)(2) has been added to establish this type of *de minimis* release.

Other types of halon-containing equipment, however, such as portable fire extinguishers and compressed gas cylinders can be partially discharged. A determination of a *de minimis* release for these other types of equipment must be made on a case-by-case basis. At the present time, however, industry standard recycling equipment generally meets or exceeds a minimum recovery efficiency of 98%. Therefore a release from halon-containing equipment which contains less than 2% of its original installed charge could be currently considered a *de minimis* release of halon.

(iii) *Exemptions from ban on intentional releases during testing*. EPA initially proposed granting an exemption from the intentional release ban for halon used to test fire suppression systems in class C and class D compartments aboard airplanes. That exemption was based on FAA requirements relating to aircraft safety. Current Federal Aviation Administration (FAA) Airworthiness Standards for transport category airplanes include a number of classifications for cargo or baggage compartments. Class C cargo or baggage compartments must contain approved built-in fire-extinguishing systems (14 CFR 25.857(c)(2)). The compartments must be designed so that hazardous quantities of extinguishing agent (as well as smoke or flames) can be excluded from areas occupied by the crew or passengers (14 CFR 25.857(c)(3)). In addition, ventilation and drafts must not interfere with the ability of the fire extinguishing agent to control any fire that starts within the compartment (14 CFR 25.857(c)(4)). Flight tests of the fire-extinguishing systems must be conducted to show compliance with these requirements (14 CFR 25.855(h)(2),(3)). These systems typically contain halons as the fire-extinguishing agent. Thus, a ban on intentional release of halons during testing would conflict with these vital safety requirements if no exemption were permitted.

Class D compartments are defined in part as aircraft cargo or baggage compartments not exceeding 1,000 cubic feet that use restriction of available oxygen, as opposed to a fire-extinguishing agent, to control fires (14 CFR 25.857(d)). In light of recent tragedies involving fires that originated in the cargo or baggage compartments of aircraft, EPA believes that class D compartments, in addition to class C compartments, should be exempted from the ban on intentional release of halon during testing of halon-containing systems. As alternative fire suppression

systems for class D compartments are explored to improve aircraft safety, FAA is considering halon systems as an interim viable option.

EPA believes that fires aboard aircraft pose such a great risk to human safety that an exemption from the ban on the intentional release of halons in accordance with FAA's Airworthiness Standards is necessary and appropriate.

Several commenters brought forward additional examples of intentional releases of halons which, they believe, also merit exemption from the proposed ban on intentional releases during testing. For example, the Federal Aviation Administration (FAA) cited the need to release halons during testing of not only class C and D cargo compartment fire extinguishing systems, but also systems in compartment classes yet to be defined, as well as systems protecting engine and auxiliary power units. It was argued that Halon 1301 is currently the best available agent in these areas, that system performance can be ensured only through testing by release of agent, and that simulant agents for use in testing purposes are not yet operationally available.

Similarly, the Department of Defense (DoD) stated that DoD aircraft, which are not subject to FAA Airworthiness Standards and thus would not be exempt from the intentional release ban if the rule were to be promulgated as proposed, likewise require an exemption for the reasons presented above. Moreover, DoD brought forth the case of fire and explosion protection systems on new military weapon systems and major modifications to existing systems which are required by law (Title 10 U.S.C. § 2366) to undergo live fire lethality testing and evaluation. Live fire lethality testing involves subjecting military equipment to live fire conditions and subsequent possible release of fire extinguishing agent in order to extinguish fires, should they occur. Suitable simulants and alternate agents are not currently available for these applications. Furthermore, the Department of Energy (DOE) raised the issue of potential necessary releases of halons for fire and explosion protection systems testing purposes at unique sites critical to national security such as the National Ignition Facility and hazardous waste management sites associated with DOE's Radiological Waste Remediation effort. No acceptable alternative agents are available, from a human safety and environmental perspective, and halon releases during testing of these systems may be required. These cases present examples in which, systems using alternative fire extinguishing agents are currently unavailable; release of agent is

currently necessary during system testing; failure of the system would pose great risk to human safety or the environment; and there are no suitable simulant agents available to be used as testing substitutes at this time.

Based on these examples, EPA recognizes that when certain conditions exist, intentional releases of halon during testing will be necessary to verify system performance, which is essential to prevent loss of life and environmental damage. Therefore, today's action exempts from the ban on intentional releases halon applications meeting the following four criteria: (1) Systems or equipment employing suitable alternative fire extinguishing agents are not available, (2) system or equipment testing requiring release of extinguishing agent is essential to demonstrate the functionality of the system, (3) failure of the system or equipment would pose great risk to human safety or the environment, and (4) a simulant agent cannot be used in place of the halon during system or equipment testing for technical reasons. Should conditions change such that an application currently meeting these criteria no longer met these criteria, then that application would no longer be exempt from the ban on intentional releases of halons during testing. It should also be noted that many applications will not be covered under this exemption. For example, numerous industry fire suppression systems for electronics rooms and computer rooms no longer require field/install testing. Testing has been adequately performed through computer simulation, with supplemental in-lab halon system testing to verify computer simulations.

(iv) *Exemption for R&D.* A number of commenters argued for the need to exempt halon released during testing for research and development (R&D) efforts. Several types of R&D-related halon release were identified. Some halon is released in research to identify and test substances under development as alternatives to halons. Such releases from halon-containing equipment are necessary to establish performance benchmarks for halon alternatives. In addition, releases of small quantities of halon from halon-containing equipment such as storage cylinders is routinely performed by halon recyclers in order to obtain samples which will be chemically analyzed to establish the identity and degree of contamination of the equipment contents. This testing is an essential step in the responsible management of halon stocks.

EPA recognizes that the use of small quantities of halon to test sample purity and to conduct research and

development on halon alternatives are indispensable to maintaining the quality of existing supplies as well as for finding alternatives with comparable performance characteristics. Therefore, EPA concurs in today's action that there is a legitimate need to exempt from the ban on intentional releases during testing the above-mentioned R&D releases, and §§ 82.270(b)(4) has been added to respond to this need.

In addition, an industry commenter engaged in developing fire extinguishing systems for aviation and defense applications noted that qualification and development testing involving release of halons is necessary during the fire extinguishing systems product development process, and requested an exemption from the ban on the intentional release of halons during testing for this purpose.

EPA recognizes that in the design and development stages of fire and explosion suppression and inertion equipment and systems, releases of agent may be necessary to determine, for example, whether critical design criteria are met. However, EPA is aware that it may be possible in many cases to employ a halon simulant agent (discussed in Preamble § 5(viii)) for such testing purposes. Moreover, EPA is aware that in some testing situations, release of agent may not be necessary to demonstrate system or equipment functionality. Therefore, because product design and development may legitimately require releases of agent during product qualification and development testing, as the commenter attests, but because such releases may in many other cases be avoidable as described above, EPA is providing an exemption from the ban on intentional releases of halons during testing for the design and development of fire and explosion protection and inertion systems and equipment only when (a) system or equipment testing requiring release of agent is essential to demonstrate system or equipment functionality, and (b) when a suitable simulant agent cannot be used in place of the halon. Section 82.270(b)(5) has been added to reflect this exemption.

(v) *Questioning of aviation exemption from ban on intentional releases during testing.* A major fire protection industry association questioned the consequences of an exemption from the ban on intentional releases for FAA Airworthiness Standards testing. The commenter suggested that the exemption would be tantamount to "proposing a new application for [Halon 1301] which would require extensive testing (i.e., release of halon into the atmosphere \* \* \*) [and] seems ill-

advised." It must be noted that this rule does not introduce any new halon applications. The rule bans intentional releases during testing of existing and potential halon applications, but provides limited exceptions to this ban, as described elsewhere in this Preamble. These exceptions do not introduce new sources of halon releases to the atmosphere; rather, the ban reduces many sources of releases, while it provides for a narrowly-defined set of excepted releases.

(vi) *Owner responsibility regarding emissions due to equipment disrepair and venting of halon.* A commenter suggested that EPA provide an explicit statement regarding the responsibility of owners of halon-containing equipment to the effect that halon emissions caused by faulty (e.g., leaking or malfunctioning) halon-containing equipment are banned by this rule. For safety reasons, the fire protection community already observes standards and practices to ensure the maintenance of fire protection systems in properly functioning conditions. It might therefore be argued that current practices within the fire protection community, in theory, would prevent halon emissions due to equipment allowed to fall into a state of disrepair. EPA, however, concurs with the need to codify this aspect of owner responsibility, and has added § 82.270(f) to address this issue explicitly.

A second issue regarding equipment owner responsibility was raised in material submitted by another commenter. It was suggested that if reclamation of halon blends is not economically advantageous, then halon losses via "midnight venting" by equipment owners and recyclers who have been storing such blends will be encouraged. EPA recognizes that certain circumstances might encourage "midnight venting", as the commenter suggests; further recognizes that, currently, there are no prohibitions to such losses; and also notes that the same arguments may be made for unblended halons as well. Therefore, to discourage the disposal of halon by venting, the definition of "halon disposal" has been slightly broadened in today's final rule to ensure that it covers the loss of halon via venting. That is, the definition has been changed from "the discarding of halon recovered from halon-containing equipment" to "the process leading to and including the discarding of halon from halon-containing equipment".

### 3. Technician Training

In an effort to reduce unnecessary emissions, distributors and service companies sponsor technician training

programs that are primarily administered by representatives of equipment manufacturers. Additionally, distributors and service companies augment this training through the use of videos and in-house training about the reduction of emissions through the use of standards and codes. These standards and codes are developed by organizations such as the NFPA and UL, which provide minimum requirements for the design, selection, installation, inspection, and maintenance of halon-containing equipment. This additional training may also include information regarding applicable state and local codes and standards. EPA believes that the fire protection community has responded responsibly to the following tangible incentives to reduce emissions and provide adequate training. First, the value of halon has increased dramatically as it has become less available since the ban on halon production in 1994. Second, in an effort to be responsive to environmental concerns, the fire protection community has developed self-imposed service standards and practices to reduce emissions and increase recycling. Because these positive incentives directly impact industry profitability, EPA believes that more stringent requirements for minimizing halon emissions or for technician training are not necessary and would produce very little environmental benefit. Today's final rule therefore is based on the practices the industry has already voluntarily developed and implemented.

Several commenters urged that the scope and documentation requirements associated with the technician training provisions be clarified, and that the proposed time frame (30 days) for implementation of the training requirement be extended. Specific suggestions were (a) to allow 180 days, not 30, following promulgation date, for all technicians to be trained, (b) to allow 90 days for the training of new technicians, (c) to refer to published industry standard service practices to provide guidance regarding the nature of the training expected by EPA under this rule, (d) to state explicitly that a record of training is required in order to facilitate the enforceability of this rule.

(i) *Increased time to institute training requirement.* EPA recognizes that a training program requires time to develop training materials and to offer training to all required personnel. EPA concurs that a period of 180 days instead of 30 days is needed to be able to provide training for all relevant current employees, and further concurs with the need to specify the timing of

the training requirement for new personnel (personnel hired after the promulgation date of this rule). However, once training programs are established, given the limited complexity of the envisioned training, it should be possible, and is important to the objective of the rule, to train technicians who test, maintain, service, repair, or dispose of halon-containing equipment, within 30 days.

(ii) *Clarification of training requirements.* EPA agrees with the usefulness of looking to industry's extensive experience and investment in responsible halon management, and published industry standards, for guidance as to training material. Accordingly, EPA inquired within the halon recycling industry and with other technical experts regarding suitable guidance documents. During these discussions, the following list of documents was developed, and is provided below as a suggested list of suitable materials that may be helpful in developing training regarding halon emission reduction. These documents describe practices for handling, testing, servicing, maintaining, and transporting fire extinguishing systems. These manuals reflect and emphasize the importance of halon emissions minimization.

Regarding the commenter who urged that EPA explicitly require training documentation, EPA believes that most facilities instituting training will maintain training records for their own record-keeping purposes. Therefore, EPA believes that no such requirement is necessary.

Another commenter requested that technicians who will have been trained prior to the promulgation date of the rule should be considered as having satisfied the training requirement. As written, the final rule requires that organizations will take appropriate steps to ensure that technicians hired on or before 30 days following the publication date of this rule shall be trained regarding emissions reductions by 180 days from the rule publication date. EPA believes that the final rule language addresses the commenter's suggestion since training regarding emissions reduction received prior to the promulgation date of the rule would satisfy the requirement to occur by 180 days from the rule publication date.

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#### Industry standards

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National Fire Protection Association (NFPA) 10. Standard for Portable Fire Extinguishers.  
NFPA 12A. Halon 1301 Fire Extinguishing Systems.

## Industry standards

International Organization for Standardization (ISO)-7201-1. Fire protection—Fire extinguishing media—Halogenated hydrocarbons—Part 1: Specifications for halon 1211 and halon 1301.

ISO-7201-2. Fire extinguishing media—Halogenated hydrocarbons—Part 2: Code of practice for safe handling and transfer procedures of halon 1211 and halon 1301.

American Society for Testing and Materials (ASTM) D5632-94a. Standard Specification for Halon 1301, Bromotrifluoromethane (CF<sub>3</sub>Br).

ASTM D5631-94. Standard Practice for Handling Transportation and Storage of Halon 1301 Bromotrifluoromethane (CF<sub>3</sub>Br).

(iii) *Clarification of persons considered technicians.* A commenter requested that the last sentence of the definition of technician in § 82.260 (“Technician includes but is not limited to installers, contractor employees, in-house service personnel, and in some cases, owners”) be deleted, as it might imply that training for these individuals is required as for other technicians. However, it is indeed EPA’s intent to require training for these individuals, and all others who perform tasks on halon-containing equipment that might reasonably be expected to release halons from the equipment into the atmosphere. The individuals identified in the sentence to which the commenter refers are simply illustrative examples of the term “technician” defined in the two sentences preceding the referenced sentence.

#### 4. Disposal of Halons and Halon-Containing Equipment

The proposed rule required owners of equipment containing halon (including a halon blend) to dispose of the equipment by sending the equipment for halon recovery to a fire equipment distributor, a manufacturer, or a halon recycler operating in accordance with NFPA 10 and 12 A standards. The proposal also required halon (including a halon blend) to be disposed of by sending it to a halon recycler for recycling.

Due to industry outreach efforts, owners of halon-containing equipment and those disposing of halon are already aware of the importance of halon recycling and banking. Industry trade organizations have already been encouraging owners of halon-containing equipment and those disposing of halon to contact manufacturers, halon fire equipment distributors or halon recyclers to ensure that halon is safely removed and recovered for future use. Therefore, today’s final action is consistent with current industry

practices and would not create an additional burden for equipment owners. Most halon systems and extinguishers in use today are purchased, installed, and serviced by fire equipment distributors. Because of the efficiency of these established distribution channels, industry representatives indicate that the simplest way to assure proper recycling of halon is simply to require equipment owners to return halon-containing equipment to distributors. In many cases owners may receive a payment for the halon contained in the equipment because of the current market value of halon. The market value of halon has provided an incentive to industry to consistently recover and recycle halons. These regulations will ensure proper handling at such point that halon supply exceeds the demand.

(i) *Clarification of meaning of equipment disposal.* EPA’s objective in Section 82.270(d) is to ensure that any halons currently deployed in equipment or storage are, at the end of the equipment’s useful life, properly recovered and made available for recycling (or safely stored for eventual destruction, e.g. when economic incentive no longer exists to use recycled halons), and not simply released to the atmosphere. However, EPA received numerous comments regarding these disposal requirements indicating that the proposed scope of the requirements was unclear. Several commenters stated that § 82.270(d) could be interpreted to require the disposal of the equipment itself, together with the halon it contains. Other commenters stated that § 82.270(d) could be taken as a complete recall of all currently deployed halon-containing equipment within 30 days following promulgation of the rule and not, as stated in the Preamble to the proposed rule, only “at the end of [the] useful life” of such equipment. Two fire protection industry commenters further suggested that the “useful life” concept itself involves a number of factors (e.g., manufacturer’s warranty, extinguisher usage, the number of times the extinguisher has been recharged, repair parts used, and cylinder condition) and requires more precise definition.

With respect to the first comment, EPA in the rule as proposed provided for both the situations in which (a) halon-containing equipment, together with the halon it contains, is to be disposed, and (b) only the halon that has been contained in equipment, but not the equipment itself, is to be disposed. Therefore, the disposal requirement as proposed clearly does not unconditionally require the disposal

of the halon-containing equipment itself.

The second and third comments raise a question of precisely when (e.g., within 30 days; at the end of the equipment’s useful life) equipment disposal is required by the rule. It is not the intent of the rule, however, to establish requirements regarding the point at which the disposal of halon-containing equipment occurs. Rather, EPA’s intent is to establish requirements regarding the proper recovery of halon from halon-containing equipment at such time as the equipment disposal would normally occur. To clarify this intent, the regulatory language has been changed from “Effective 30 days following promulgation, owners of halon-containing equipment shall dispose of that equipment by forwarding it for halon recovery \* \* \*” to “Effective 30 days (following publication), no person shall dispose of halon-containing equipment except by sending it for halon recovery \* \* \*”.

One additional commenter noted that the definition of “disposal of halon-containing equipment” did not appear to include the sale, for reuse in its entirety, of halon-containing equipment, and thus the rule does not restrict sales, for reuse in its entirety, of halon-containing equipment. The commenter’s observation is consistent with the intended meaning of the rule. The definition of “disposal of halon-containing equipment” does not in fact include the sale, for reuse in its entirety, of such equipment.

Finally, one commenter urged that EPA clarify that empty equipment which formerly contained halon, but which has been fully discharged, is not affected by the requirement that no person shall dispose of halon-containing equipment except by sending it for halon recovery to appropriate facilities. EPA concurs with the comment that little or no environmental benefit would be gained from requiring halon recovery from empty equipment or equipment containing only *de minimis* quantities of halon. As described in Preamble § 2(ii), EPA has clarified the meaning of *de minimis* quantities of halon. EPA in today’s final action has exempted equipment containing *de minimis* quantities of halon from the equipment disposal provision and has specified that that provision does not apply to fully discharged total flooding systems. These changes are reflected in § 82.270(d) of the regulatory text.

(ii) *Clarification of meaning of halon-containing equipment.* EPA received several comments indicating that the term, “halon-containing equipment” requires more detailed definition in the

regulatory text. One commenter stated that it is necessary to define the precise equipment covered under this provision, suggesting the language, "cylinders or containers and materials or parts thereof, which are necessary for servicing the safe and secure containment of the halon within the cylinder or container". The commenter, a member of the fire protection system industry, further explained that equipment manufacturers, fire suppression system distributors and halon recycling services do not typically dispose of the entire system associated with halon containment (such as electrical detection control components), but deal more strictly with the proper handling and disposal of parts and materials associated with safe and secure halon containment. Other commenters proposed language for defining "halon-containing equipment" in § 82.260, which defines terms used in the rule.

In the context of the halon-containing equipment disposal provision, EPA believes that the term "halon-containing equipment" both implicitly has the intended meaning suggested in the commenter's language and also implicitly excludes fire protection or suppression system components which are ancillary to halon containment. Had the intent been to include such ancillary system components, a term such as "entire system associated with halon-containing equipment," or "fire protection system utilizing halon", would have been used.

However, in order to ensure the clarity of the intended scope of the halon-containing equipment disposal provision, and the meaning of halon-containing equipment throughout the rule, a general definition of halon-containing equipment ("equipment used to store, transfer, and/or disperse halon") has been added to the definitions section of the final rule. This definition does not include small scale laboratory equipment used solely for scientific research; an example of such research equipment is a gas chromatograph which might contain, in tubing or piping, residual quantities of samples of halon gases injected for analysis. Furthermore, the following clarification has been added to § 82.270(d): "This provision does not apply to ancillary system devices such as electrical detection control components that are not necessary to the safe and secure containment of the halon within the equipment."

(iii) *Clarification of meaning of halon disposal.* One commenter stated that the term "halon disposal" could be interpreted to mean "halon

destruction." Halon destruction in the current context means a process that destroys halon's ozone-depleting properties. The term "halon disposal" is explicitly defined as the process leading to and including discarding of halon from halon-containing equipment. In the rule as proposed, in contrast with the commenter's interpretation, recycling is presented as the only available halon disposal option, and halon destruction is not presented as a disposal option. However, in reality, halon destruction by one of the destruction technologies approved by the Parties to the Montreal Protocol is a disposal option which EPA does not wish to preclude. As discussed later in this Preamble (§ 5(vi)), another commenter urged that the safe destruction of halon be part of a long-term management plan for U.S. halon supplies. Therefore, § 82.270(e) has been changed to include this disposal option. The destruction technologies currently approved by the Parties to the Protocol are liquid injection incineration; reactor cracking; gaseous /fume oxidation; rotary kiln incineration; cement kiln; and radiofrequency plasma destruction. In the future, the Parties may approve of other destruction technologies; thus there is the possibility that such other technologies would, if approved by EPA, present other destruction options.

(iv) *Clarification of "recycler" and compliance with NFPA guidance.* Several commenters raised questions regarding the extent to which halon recycling facilities, including in-house recycling facilities, must demonstrate compliance with the NFPA industry standards referenced in the regulatory text. A major industry commenter requested clarification of the extent to which halon equipment owners are obligated to verify compliance of their recyclers' procedures with the NFPA industry standards prescribed in the rule. The commenter further asserted that imposition of obligation on the equipment owner, beyond requiring a contractual assertion from the disposer that they do in fact operate in compliance with the prescribed industry standards, would be inappropriate. A second commenter sought confirmation that the term "recycler" could encompass in-house recycling facilities operating in accordance with the cited NFPA standards.

The industry association responsible for developing the standards cited in the rule has no power or authority to police or enforce compliance with its published standards, and states that "any certification of products stating compliance with requirements of this

document is made at the peril of the certifier." While EPA seeks to ensure compliance with industry recycling standards, EPA concurs that a contractual agreement between the equipment owner and the recycler that the recycling is performed in compliance with the prescribed standards will achieve the desired objective.

Regarding the second comment, EPA concurs that the term "recycler" encompasses in-house facilities which perform halon recycling in accordance with NFPA 10 and 12A standards. That is, in § 82.270(d), the expression "no person shall dispose of halon-containing equipment except by sending it for halon recovery \* \* \*" and in § 82.270(e), the expression "no person shall dispose of halon except by sending it for recycling\* \* \*" are not meant to preclude halon recovery or recycling by in-house facilities which perform these functions in accordance with NFPA 10 and 12A standards.

(v) *Request for clarification of the term "fire equipment dealer".* Two fire protection industry associations requested that the term, "fire equipment dealer", be defined as a "qualified, properly trained person or organization engaged in the business of servicing and disposing of halon-containing equipment." Because it has been specified that the fire equipment dealers referenced in the rule must be ones who operate in accordance with the NFPA standards relevant to halon-containing equipment, the additional definition is deemed unnecessary.

## 5. Other Comments

(i) *Importations of used halons from Article 5 countries.* A major halon industry commenter proposed that all imports of used halons from countries operating under Article 5 of the Montreal Protocol be prohibited. The commenter cited a recent solicitation from an Article 5 country to regularly supply massive quantities, far in excess of the current aggregate U.S. demand, of Halon 1301 to the United States. The commenter identified possible adverse economic and environmental consequences such an influx might have, discussing its impact on management of U.S. halon stocks and on the world requirement for new halon production.

EPA recognizes the substantial influence that market conditions have exerted upon ODS handling in this country and elsewhere, and is accordingly concerned with the appropriate management of halon stocks and flows. However, the authority under which today's rule is developed does

not extend to issues of ODS importation, but rather directs the Agency to establish requirements regarding the use and disposal of ODSs with the goal of reducing their use and emissions, and maximizing their recapture and recycling; the Agency has taken the commenter's issue under advisement under a different authority (Sections 604 and 606 of the CAA).

(ii) *Criticism of rule basis.* A former manufacturer of fire extinguishers employing an extinguishing agent containing a blend of Halons 1211 and 1301 questioned whether the proposed ban on the sale of halon blends would promote or hinder the goal of reducing halon emissions. He suggested that the proposed ban would not reduce halon emissions because: (1) Halon blends are not manufactured any more in the United States, (2) a ban could result in encouraging midnight venting (presumably because the value and market for blends would vanish following such a ban), (3) blends technically can be recycled, despite the fact that it is currently impracticable to do so, and (4) most halon emissions arise during the recharging of fire extinguisher units with Halon 1211, and not from use and handling associated with equipment containing halon blends.

The points made by the commenter have some merit; however, EPA believes that the arguments above do not weaken the basis for this regulatory action for the following reasons. First, halon blends are currently manufactured within the United States at very low levels. However, it is not possible to forecast with certainty that the manufacture of blends will vanish in the future. EPA's concern with continued, even low-level, production of halon blends is the potential accumulation of a distributed pool of halon blends for which insufficient incentive exists to recover. Because of the low market volume of the blends, recycling infrastructure is not currently equipped to economically recycle blended products. Therefore, in recent years, because of the increased value of halons, use of halon blends has diminished further. The possibility of midnight venting exists with or without a formal ban, if current market trends for the product continue. EPA, in this rulemaking, has specifically included provisions governing the proper disposal of all halon products, thus providing a regulatory incentive not to vent. Finally, the fact that most halon emissions arise during testing and training, service and repair, and accidental discharges does not preclude the necessity to avoid other possible

releases such as from the existence of a pool of non-recyclable halon blends. It should also be noted that EPA has included in this rulemaking provisions governing the release of halons during servicing of halon-containing equipment.

(iii) *Coordination of Federal policy on aviation halon use.* A national fire protection association, while recognizing the need to exempt aviation halon applications from the ban on releases for testing, criticized the current collective federal policy on halon use as being "far too disjointed and piecemeal \* \* \* with far too little emphasis on the prompt identification and certification of effective alternative suppression agents." This association urged coordinated and timely federal policy making on halon alternatives for aviation to assure public safety in the face of a possible requirement among the Parties to the Montreal Protocol to destroy halons. The commenter suggested that the aviation exemption contained in this rule be handled as part of a more comprehensive policy moving toward prompt replacement of halons used in aviation.

EPA concurs with the idea that a coordinated Federal effort to promote halon alternatives is the optimal approach toward this goal. Section 613 of the CAA directs all federal agencies to promulgate regulations conforming their procurement regulations to the provisions of Title VI (Stratospheric Protection) of the CAA and to maximize the substitution of safe alternatives to class I (encompassing halons) and class II substances. Federal agencies have in response devoted considerable resources to developing relevant regulations and guidance.

EPA and FAA further recognize the specific importance of coordinated federal, as well as industry, effort in halon replacement in aviation (see, for example, the section, "Halon Considerations," in the FAA NPRM at 62 FR 32412, 32417, June 13, 1997. EPA support for FAA's continued use of halons in aviation is conditional on the aviation industry efforts to develop halon alternatives, and on FAA's accelerated efforts to develop criteria for certification of alternatives. FAA has participated in an extensive program to develop criteria on which to evaluate possible alternatives. Thus, EPA believes that the goal of coordinated federal effort is being pursued, and that today's aviation-related exemptions from the ban on intentional halon releases during testing will not set this effort back.

(iv) *Support for rulemaking.* Many commenters expressed support for the

intent and motivation of the rule—to minimize halon emissions and thereby reduce damage to the Earth's stratospheric ozone layer.

(v) *Certification of halon recycling and recovery equipment.* Based upon its experience with a program to promote the recovery of halons in businesses, schools, and communities throughout the U.S. mid-Atlantic area, an environmental group observed a need to require certification of recycling and recovery equipment used in halon recovery. EPA also recognizes the merit in considering a certification requirement as a potentially important element of halon regulation, and is revising a study on the merits of such a requirement. EPA will address this issue in a separate action.

(vi) *Long-term halon policy.* An environmental group urged the EPA, in cooperation with the DoD halon bank, industry, environmental groups, and the fire protection community, to develop a long-term management plan for U.S. halon supplies. Such a plan, they commented, should enable halon use in essential applications, or the safe destruction of halon, while preventing further ozone depletion.

EPA concurs with the need to consider long-term halon supply situations, and to develop plans, in conjunction with industry, environmental groups, the fire protection industry, and federal agencies, such that the complete halon life cycle is properly managed. This need has to a large extent been met through the successful development and management of a domestic halon banking system, overseen by the Halon Recovery Corporation (HRC), in addition to a military bank operated by the Defense Logistics Agency. Furthermore, EPA routinely participates in meetings with various stakeholders, formal and informal research and information exchange among all parties, monitoring of key research and development regarding halon destruction technologies, and assistance, when appropriate, in research relating to federal rulemaking.

In recent years the regulation of halons and other ODSs has led to economic incentives to conserve halon supplies and has driven the community of halon users to minimize losses of this commodity. Nevertheless, since the future dynamics of the halon market cannot be known with certainty, today's rulemaking is a necessary strengthening and codification of these environmentally friendly practices that have become standard practice within the U.S. fire protection community.

(vii) *Discussion of "essential use" concept.* Two commenters, in discussing the need for a broader set of exemptions from the ban on intentional release during testing, specifically suggested applying the "critical use" [sic] criteria, contained in Decision IV/25 of the Parties to the Montreal Protocol ("Parties"), as EPA's basis for granting exemptions to the intentional release ban.

Article 2 of the Protocol states that Parties may create exemptions to the phaseout of an ODS for uses agreed by them to be "essential." Decision IV/25 contains the criteria to be applied in making "essential use" determinations. The only uses deemed essential under the Protocol to date are metered dose inhalers, the space shuttle and Titan rocket, and certain laboratory uses. No use of halons (other than laboratory use) has been approved as essential.

Consequently, a more appropriate basis for an exemption from the ban on intentional release during testing, as discussed above, requires that (1) Systems or equipment employing suitable alternative fire extinguishing agents are not available, (2) system or equipment testing requiring release of extinguishing agent is essential to demonstrate the functionality of the system or equipment, (3) failure of the system or equipment would pose great risk to human safety or the environment, and (4) a simulant agent cannot be used in place of the halon during system or equipment testing for technical reasons.

(viii) *Simulant agents.* Several commenters raised the subject of simulant agents—less or non-ozone-depleting substances with similar enough physical properties to allow them to be used as proxies for the halon agent during fire suppression system testing. The research to develop such simulants is promising, and some of these substances are approaching acceptance for some of the applications mentioned in the preceding paragraph. HFC-125, in particular, was identified in a major Navy research program as an excellent halon simulant. One commenter suggested that the exemption for aviation applications may delay the adoption of simulants for use in aviation system testing. EPA acknowledges that an exemption from the ban on intentional releases of halons during testing for a class of halon applications, when a suitable simulant is available, might counteract the regulatory objective of this rule. However, in establishing the non-availability of a suitable simulant as a condition for an exemption (see

previous section), EPA has avoided a delay in the adoption of simulants.

(ix) *Savannah River Halon Repository.* The DOE states that the proposed rule could have economically significant impacts on procedures at its Savannah River halon repository. The rule, it was stated, could "require potential training, installation of release prevention devices, loss of revenue from the sale of portable fire extinguishers, additional costs for sending halon and equipment offsite for recovery, recycling, and disposal, and additional record keeping costs."

With respect to the sale of portable fire extinguishers, as clarified in this Supplementary Information to today's rule, EPA does not ban the sale of pre-existing stores of halon blends such as those in previously manufactured portable fire extinguishers. In addition, this rule does not impose specific recordkeeping requirements. Furthermore, as clarified above, no additional costs need be incurred for off-site halon recovery if appropriate recovery procedures can be performed on-site in a manner consistent with industry standards.

With respect to training, installation of release prevention devices, and other measures related to this rulemaking that might be necessary at DOE's Savannah River halon repository, EPA concurs that such measures could have economic impacts. However, EPA does not concur that such impacts would result directly from this rule. The practices codified in today's rule, as explained earlier, reflect practices already currently widely adopted by industry. Moreover, responsible management of halon stocks has been a Federal objective for 7 years. Section 613 of the CAA, as discussed elsewhere, directs all Federal agencies to promulgate regulations conforming their procurement regulations to the provisions of Title VI (Stratospheric Protection) of the CAA and to maximize the substitution of safe alternatives to ozone-depleting substances (ODS), both class I (encompassing halons) and class II. Federal agencies have in response devoted considerable resources to developing relevant regulations and guidance. In response to the CAA, DOE, among other federal agencies, initiated programs to accomplish optimal ODS management. The DOE in particular developed a guidance document on this subject, "Guidance on the DOE Facility Phaseout of Ozone-Depleting Substances," published in October 1995. In the section of this document devoted to fire suppression (pp. 10-12), the DOE specifically recommends training programs to accomplish

essentially the same objective that today's training requirement is designed to achieve (i.e., "All Department Elements should take steps to avoid inadvertent discharge of Halon systems and extinguishers through timely maintenance of fire detection equipment, proper use of recovery/recycling equipment, attention during servicing, and suitable personnel training"). Therefore, EPA believes that today's rule does not impose additional costs or burdens on the Savannah River site that did not already exist.

(x) *Clarification of applicability of rule.* One commenter suggested that the language of § 82.250(b), describing the applicability of the rule, is too broad. The commenter stated that the applicability of the rule should be strictly limited to equipment used to store and hold halon, and not the entire fire suppression system including such ancillary components as control panels. EPA does not concur with the comment because § 82.250(b) is meant to broadly identify the possible universe of entities to which the rule applies. In later sections of the rule that enumerate specific prohibitions and provisions, the scope of applicability is much more strictly defined. Since not all provisions of the rule apply to the same set of entities, it is necessary in the "Purpose and Scope" section of this rule to broadly encompass all affected populations.

(xi) *Lack of necessity for several major provisions of the rule.* Two commenters from an industry with well-known halon requirements stated that some of the chief provisions of the proposed rule (e.g., requirements for technician training, and for proper halon and halon-containing equipment disposal), were unnecessary because they were already practiced at their companies; in fact, rather than provide additional environmental benefit, it was argued in one case that the rule would simply impose unnecessary record-keeping burdens.

EPA concurs that technician training and proper halon and halon-containing equipment disposal is widely practiced throughout industry, based on industry research conducted in developing this rule. Nevertheless, EPA believes that it is necessary to codify these practices in order to ensure their continued implementation should the market conditions, currently conducive to halon emissions reduction and halon recycling, change. Regarding the suggestion that this rule imposes unnecessary record-keeping burdens, EPA points out that this final rule does not establish any record-keeping requirements.

## 6. References

Gann, R.G., editor, 1975. Halogenated Fire Suppressants. A Symposium Hosted by the Southwest Research Institute, San Antonio, TX, April 23-24, 1975. ACS Symposium Series 16, American Chemical Society, Washington, D.C. 453 pp.

## IV. Summary of Changes From Proposed Rule

In this final action, EPA is promulgating regulations relative to halons under CAA section 608. Several additional exemptions and clarifications have been made to provisions of this rule. Definitions of halon, halon product, halon blend, and halon-containing equipment have been added. In addition, *de minimis* releases have been discussed in greater detail. Because the intent of the ban on the sale of halon blends was to prevent the manufacture of new halon blends, the ban has accordingly been revised to focus on manufacture, rather than on sale. The time frame for implementing the training requirements has been extended. Disposal requirements have been further clarified, with a specific provision addressing equipment owners' responsibilities regarding loss of halon due to equipment disrepair, and with modifications to the definition of halon disposal. An exemption from the ban on the new manufacture of halon blends has been added for situations in which (1) the manufacturer or its designee is capable of recycling the blend to the relevant industry standards for the chemical purity of each individual halon, (2) the manufacturer includes in all sales contracts for blends produced by it on or after April 6, 1998 the provision that the blend must be returned to it or its designee for recycling, and (3) the manufacturer or its designee in fact recycles blends produced by the manufacturer on or after April 6, 1998 and returned to it for recycling to the relevant industry standards for the chemical purity of each individual halon. Finally, additional exemptions have been provided for halon releases during testing of halon fire and explosion protection systems when the application meets a set of criteria enumerated in the rule.

## V. Administrative Requirements

### a. Executive Order 12866

Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether this proposed regulatory action is "significant" and therefore subject to OMB review and the requirements of the Executive Order.

The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

It has been determined by OMB and EPA that this action is not a "significant regulatory action" under the terms of Executive Order 12866 and is therefore not subject to OMB review under the Executive Order.

### b. Regulatory Flexibility

EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this final rule. EPA has also determined that this rule will not have a significant economic impact on a substantial number of small entities.

This final rule will not have a significant economic impact on a substantial number of small entities for the following reasons. The rule will not have a significant impact in the area of intentional release because it closely models current industry standards for prevention of intentional release of halon during repair, testing, and disposal of halon-containing equipment, and during technician training. The rule also will not have a significant impact in the areas of technician training and disposal of halons and halon-containing equipment because it closely models current industry standards, including the practice of recovering halons for reuse or recycling. Because the use of halon blends has already declined substantially, there will not be a substantial number of entities affected by the requirement to dispose of halon blends through recycling or destruction. Because the market for halon blends is so small, and because alternatives to halon blends are available for distribution and sale, the ban on the manufacture of halon blends will not have a significant impact on a substantial number of small entities. Businesses that manufacture halon blends will be subject to the ban;

however, there will not be a significant impact on these businesses and these businesses are not substantial in number. One of the two U.S. manufacturers of halon blends of which EPA is aware has stated that the ban on halon blends will minimally impact the business' profitability; and the other manufacturer will be exempted from the ban providing that its product will be adequately recycled and thus pose no environmental risk.

### c. Unfunded Mandates Act

Section 202 of the Unfunded Mandates Reform Act of 1995 ("Unfunded Mandates Act") (signed into law on March 22, 1995) requires that the Agency prepare a budgetary impact statement before promulgating a rule that includes a Federal mandate that may result in expenditure by State, local, and tribal governments, in aggregate, or by the private sector, of \$100 million or more in any one year. Section 203 requires the Agency to establish a plan for obtaining input from and informing, educating, and advising any small governments that may be significantly or uniquely affected by the rule. Section 204 requires the Agency to develop a process to allow elected state, local, and tribal government officials to provide input in the development of any action containing a significant Federal intergovernmental mandate. Under section 205 of the Unfunded Mandates Act, the Agency must identify and consider a reasonable number of regulatory alternatives before promulgating a rule for which a budgetary impact statement must be prepared. The Agency must select from those alternatives the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule, unless the Agency explains why this alternative is not selected or the selection of this alternative is inconsistent with law.

Because this final rule is estimated to result in the expenditure by State, local, and tribal governments or the private sector of less than \$100 million in any one year, the Agency has not prepared a budgetary impact statement or specifically addressed the selection of the least costly, most cost-effective, or least burdensome alternative. Because small governments will not be significantly or uniquely affected by this proposed rule, the Agency is not required to develop a plan with regard to small governments. Finally, because this rule does not contain a significant intergovernmental mandate, the Agency is not required to develop a process to obtain input from elected state, local, and tribal officials.

#### d. Paperwork Reduction Act

This action requires no information collection subject to the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*, and therefore no information collection request will be submitted to OMB for review.

#### e. Submission to Congress and the Comptroller General

The Congressional Review Act, 5 U.S.C. 801 *et seq.*, as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. This rule is not a "major rule" as defined by 5 U.S.C. 804(2).

#### f. Executive Order 12875

Today's action does not impose any unfunded mandate upon any State, local, or tribal government; therefore, Executive Order 12875 does not apply to this rulemaking.

#### g. National Technology Transfer and Advancement Act

The National Technology Transfer and Advancement Act of 1995 (NTTAA), § 12(d), Pub. L. 104-113, requires federal agencies and departments to use technical standards that are developed or adopted by voluntary consensus standards bodies, using such technical standards as a means to carry out policy objectives or activities determined by the agencies and departments. If use of such technical standards is inconsistent with applicable law or otherwise impractical, a federal agency or department may elect to use technical standards that are not developed or adopted by voluntary consensus standards bodies if the head of the agency or department transmits to the Office of Management and Budget an explanation of the reasons for using such standards.

This final rule does not mandate the use of any technical standards; accordingly, the NTTAA does not apply to this rule.

#### List of Subjects in 40 CFR Part 82

Environmental protection, Administrative practice and procedure, Air pollution control.

Dated: February 27, 1998.

**Carol Browner,**  
*Administrator.*

40 CFR part 82 is amended as follows:

#### PART 82—PROTECTION OF STRATOSPHERIC OZONE

1. The authority citation for part 82 continues to read as follows:

**Authority:** 42 U.S.C. 7414, 7601, 7671-7671q.

2. Part 82 is amended by adding subpart H consisting of §§ 82.250, 82.260 and 82.270 to read as follows:

#### Subpart H—Halon Emissions Reduction

Sec.  
82.250 Purpose and scope.  
82.260 Definitions.  
82.270 Prohibitions

#### Subpart H—Halon Emissions Reduction

##### § 82.250. Purpose and scope.

(a) The purpose of this subpart is to reduce the emissions of halon in accordance with section 608 of the Clean Air Act by banning the manufacture of halon blends; banning the intentional release of halons during repair, testing, and disposal of equipment containing halons and during technician training; requiring organizations that employ technicians to provide emissions reduction training; and requiring proper disposal of halons and equipment containing halons.

(b) This subpart applies to any person testing, servicing, maintaining, repairing or disposing of equipment that contains halons or using such equipment during technician training. This subpart also applies to any person disposing of halons; to manufacturers of halon blends; and to organizations that employ technicians who service halon-containing equipment.

##### § 82.260 Definitions.

*Halon-containing equipment* means equipment used to store, transfer, and/or disperse halon.

*Disposal of halon* means the process leading to and including discarding of halon from halon-containing equipment.

*Disposal of halon-containing equipment* means the process leading to and including:

(1) The discharge, deposit, dumping or placing of any discarded halon-containing equipment into or on any land or water;

(2) The disassembly of any halon-containing equipment for discharge, deposit, or dumping or placing of its

discarded component parts into or on any land or water; or

(3) The disassembly of any halon-containing equipment for reuse of its component parts.

*Halon* means any of the Class I, Group II substances listed in subpart A, Appendix A of 40 CFR Part 82. This group consists of the three halogenated hydrocarbons known as Halon 1211, Halon 1301, and Halon 2402, and all isomers of these chemicals.

*Halon product* means any mixture or combination of substances that contains only one halon (e.g., Halon 1301 plus dinitrogen gas (N<sub>2</sub>))

*Halon blend* means any mixture or combination of substances that contains two or more halons.

*Manufacturer* means any person engaged in the direct manufacture of halon, halon blends or halon-containing equipment.

*Person* means any individual or legal entity, including an individual, corporation, partnership, association, state, municipality, political subdivision of a state, Indian tribe, and any agency, department, or instrumentality of the United States, and any officer, agent, or employee thereof.

*Technician* means any person who performs testing, maintenance, service, or repair that could reasonably be expected to release halons from equipment into the atmosphere. Technician also means any person who performs disposal of equipment that could reasonably be expected to release halons from the equipment into the atmosphere. Technician includes but is not limited to installers, contractor employees, in-house service personnel, and in some cases, owners.

##### § 82.270 Prohibitions.

(a) Effective April 6, 1998 no person may newly manufacture any halon blend. Halon blends manufactured solely for the purpose of aviation fire protection are not subject to this prohibition, provided that:

(1) The manufacturer or its designee is capable of recycling the blend to the relevant industry standards for the chemical purity of each individual halon;

(2) The manufacturer includes in all sales contracts for blends produced by it on or after April 6, 1998 the provision that the blend must be returned to it or its designee for recycling; and

(3) The manufacturer or its designee in fact recycles blends produced by the manufacturer on or after April 6, 1998 and returned to it for recycling to the relevant industry standards for the chemical purity of each individual halon.

(b) Effective April 6, 1998, no person testing, maintaining, servicing, repairing, or disposing of halon-containing equipment or using such equipment for technician training may knowingly vent or otherwise release into the environment any halons used in such equipment.

(1) De minimis releases associated with good faith attempts to recycle or recover halon are not subject to this prohibition.

(2) Release of residual halon contained in fully discharged total flooding fire extinguishing systems would be considered a *de minimis* release associated with good faith attempts to recycle or recover halon.

(3) Release of halons during testing of fire extinguishing systems is not subject to this prohibition if the following four conditions are met:

(i) Systems or equipment employing suitable alternative fire extinguishing agents are not available;

(ii) System or equipment testing requiring release of extinguishing agent is essential to demonstrate system or equipment functionality;

(iii) Failure of the system or equipment would pose great risk to human safety or the environment; and

(iv) A simulant agent cannot be used in place of the halon during system or equipment testing for technical reasons.

(4) Releases of halons associated with research and development of halon alternatives, and releases of halons

necessary during analytical determination of halon purity using established laboratory practices are exempt from this prohibition.

(5) This prohibition does not apply to qualification and development testing during the design and development process of halon-containing systems or equipment when such tests are essential to demonstrate system or equipment functionality and when a suitable simulant agent can not be used in place of the halon for technical reasons.

(6) This prohibition does not apply to the emergency release of halons for the legitimate purpose of fire extinguishing, explosion inertion, or other emergency applications for which the equipment or systems were designed.

(c) Effective April 6, 1998, organizations that employ technicians who test, maintain, service, repair or dispose of halon-containing equipment shall take appropriate steps to ensure that technicians hired on or before April 6, 1998 will be trained regarding halon emissions reduction by September 1, 1998. Technicians hired after April 6, 1998 shall be trained regarding halon emissions reduction within 30 days of hiring, or by September 1, 1998, whichever is later.

(d) Effective April 6, 1998, no person shall dispose of halon-containing equipment except by sending it for halon recovery to a manufacturer operating in accordance with NFPA 10 and NFPA 12A standards, a fire

equipment dealer operating in accordance with NFPA 10 and NFPA 12A standards or a recycler operating in accordance with NFPA 10 and NFPA 12A standards. This provision does not apply to ancillary system devices such as electrical detection control components which are not necessary to the safe and secure containment of the halon within the equipment, to fully discharged total flooding systems, or to equipment containing only de minimis quantities of halons.

(e) Effective April 6, 1998, no person shall dispose of halon except by sending it for recycling to a recycler operating in accordance with NFPA 10 and NFPA 12A standards, or by arranging for its destruction using one of the following controlled processes:

- (1) Liquid injection incineration;
- (2) Reactor cracking;
- (3) Faseous/fume oxidation;
- (4) Rotary kiln incineration;
- (5) Cement kiln;
- (6) Radiofrequency plasma destruction; or

(7) An EPA-approved destruction technology that achieves a destruction efficiency of 98% or greater.

(f) Effective April 6, 1998, no owner of halon-containing equipment shall allow halon release to occur as a result of failure to maintain such equipment.

[FR Doc. 98-5720 Filed 3-4-98; 8:45 am]  
BILLING CODE 6560-50-P