

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 82

[FRL-7530-4]

RIN 2060-AF36

Protection of Stratospheric Ozone: Supplemental Rule Regarding a Recycling Standard Under Section 608 of the Clean Air Act

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Through this action, EPA is amending the Refrigerant Recycling Regulations promulgated under section 608 of the Clean Air Act Amendments of 1990. On February 29, 1996, EPA published a proposed rule regarding a recycling standard under section 608 of the Clean Air Act. Today's action finalizes portions of the February 29, 1996, proposed rule and provides information concerning EPA's intention to continue consideration of the other aspects of the proposal that are not addressed in this final rule. Today's action amends the recordkeeping aspects of the section 608 technician certification program; refines aspects of the refrigerant sales restriction; adopts updated versions of ARI Standard 700 and ARI Standard 740, both of which are industry standards previously adopted by EPA; clarifies the distinction between major and minor service, maintenance, and repair of appliances; amends several definitions; and sets forth procedures for the revocation and/or suspension of approval to certify technicians and refrigerant recycling and/or recycling equipment and revocation and/or suspension procedures for certification as a refrigerant reclaimer.

Today's action also provides readers with notice that three of the items discussed in the February 29, 1996, proposal will not be completed as part of today's action (*i.e.*, the potential adoption of a more flexible method for cleaning refrigerants where the refrigerants will be transferred between appliances with different ownership; the potential adoption of a third-party certification program for reclaimers; and the potential adoption of a third-party certification program for laboratories that verify refrigerant purity or level of contaminants).

The regulatory changes promulgated through today's action will streamline and clarify portions of the existing refrigerant recycling regulations without compromising the goals of protecting

public health and the environment or compliance with the requirements of the Clean Air Act Amendments of 1990.

EFFECTIVE DATE: The effective date for this action is September 22, 2003, except for certification of refrigerant recycling only equipment for which this rule becomes effective October 22, 2003.

ADDRESSES: Comments and supporting materials for this final rule are contained in Public Docket No. A-92-01; Environmental Protection Agency; 1301 Constitution Ave., NW., Washington, DC 20460 in room B-108. The docket may be inspected from 8 a.m. until 5:30 p.m., Monday through Friday. A reasonable fee may be charged for copying docket materials.

FOR FURTHER INFORMATION CONTACT: Julius Banks; 202-564-9870; Stratospheric Protection Implementation Branch, Global Programs Division, Office of Atmospheric Programs, Office of Air and Radiation (6205-); 1200 Pennsylvania Avenue, NW.; Washington, DC 20460. The Stratospheric Ozone Information Hotline can also be contacted for further information at 800-296-1996.

SUPPLEMENTARY INFORMATION: The contents of this preamble are listed in the following outline:

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I. Regulated Entities

Entities potentially regulated by this action are those that wish to recover, recycle, reclaim, sell, or distribute in interstate commerce refrigerants that contain chlorofluorocarbons (CFCs) and/or hydrochlorofluorocarbons (HCFCs) and those that service, maintain, repair, or dispose of appliances containing CFC or HCFC-refrigerants. In addition, the owners or operators of appliances containing CFC or HCFC-refrigerants may be potentially regulated. Regulated categories and entities include:

| Category | Example of regulated entities |
|----------------|---|
| Industry | Refrigerant reclaimers Refrigerant recovery/recycling equipment manufacturers Air-conditioning and refrigeration contractors and technicians Owners and operators of air-conditioning and refrigeration equipment Certifying programs for technicians Refrigerant recovery/recycling equipment testing organizations |

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 could potentially be affected by this action. Other types of entities not listed in the table could also be affected. To determine whether your company is regulated by this action, you should

carefully examine the applicability criteria contained in section 608 of the Clean Air Amendments of 1990 and 40 CFR part 82, subpart F, published on May 14, 1993 (59 FR 28660). 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. Refrigerant Recycling Regulations

Final regulations promulgated by the U.S. Environmental Protection Agency (EPA) under section 608 of the Clean Air Act Amendments of 1990 (the Act), and published on May 14, 1993 (58 FR 28660), established a recycling program for ozone-depleting refrigerants recovered during the maintenance, service, repair, and disposal of air-conditioning and refrigeration equipment. The ozone-depleting refrigerants recycling regulations are codified at 40 CFR part 82, subpart F. Section 608 of the Clean Air Act prohibits the knowing venting, release, or disposal into the environment of any class I or class II substance used as a refrigerant during the maintenance, service, repair, and disposal of appliances or industrial process refrigeration equipment. Together with this statutory prohibition, the refrigerant recycling regulations are intended to substantially reduce the emissions of ozone-depleting refrigerants. The refrigerant recycling regulations were amended in final regulations published on November 9, 1994 (59 FR 55912); March 17, 1995 (60 FR 14607); and August 8, 1995 (60 FR 40419).

As promulgated, the refrigerant recycling regulations established recovery/recycling equipment and reclamation certification requirements, developed a technician certification requirement, and established that persons servicing air-conditioning and refrigeration equipment observe certain service practices to reduce emissions. The regulations also require that ozone-depleting compounds contained in appliances be removed prior to disposal of the appliances, and that all air-conditioning and refrigeration equipment, except for small appliances, be provided with a servicing aperture to facilitate recovery of refrigerant. In addition, the regulations restrict the sale of ozone-depleting refrigerants and establish a leak repair requirement for appliances that normally hold a refrigerant charge of more than 50 pounds. Also, the refrigerant recycling regulations require that refrigerant recovered from an appliance but not returned to that appliance or another appliance with the same ownership, be reclaimed by an EPA certified reclaimer.

As promulgated at 58 FR 28712, 40 CFR 82.154(g) and (h) prohibit the sale or offer for sale of any class I or class II substance consisting of used refrigerant, unless it has been (1) reclaimed as defined at § 82.152(q) and (2) reclaimed by a person certified as a reclaimer in accordance with § 82.164. These prohibitions were effective until May 15, 1995. On March 17, 1995, EPA promulgated a final rule extending the effective date of § 82.154(g) and (h) until March 18, 1996, or until EPA could promulgate a rule to adopt new specifications for reclaimed refrigerants based on industry guidelines (60 FR 14610). On February 29, 1996, EPA promulgated a final rule extending the effective date of these recycling prohibitions until December 31, 1996, or until EPA completes a rulemaking to adopt revised specifications for reclaimed refrigerants based on industry guidelines (61 FR 7724). On December 27, 1996, EPA indefinitely extended the effective date of the reclaimed refrigerant specifications of § 82.154(g) and (h) until EPA could complete a rulemaking to adopt the revised specifications (61 FR 68508).

III. Proposed Revisions to the Refrigerant Recycling Regulations

On February 29, 1996, EPA issued a Notice of Proposed Rulemaking (NPRM) that proposed amendments to several aspects of the recycling program (61 FR 7858). The NPRM proposed to allow additional flexibility in situations where refrigerants are transferred between appliances with different ownership; to adopt a third-party certification program for reclaimers and laboratories; to amend the recordkeeping aspects of the technician certification program; and to clarify aspects of the sales restriction. In addition, EPA proposed changes for the testing of recovery/recycling equipment and proposed to adopt the 1995 version of the industry standard ARI Standard 740 (an earlier version of which had been previously adopted by EPA). Also, the proposal included clarifications regarding the distinction between major and minor repairs.

IV. Summary of Comments Received on the Notice of Proposed Rulemaking

EPA received comments from 39 respondents on the refrigerant recycling NPRM. In addition, EPA also received two non-adverse comments on the direct final rulemaking to extend the reclamation requirements that were published in that same issue of the **Federal Register** (61 FR 7724). EPA has addressed the comments and questions submitted by these respondents with the exception of comments related to the

three proposed items that the Agency will not address in today's final rule, namely the potential adoption of a more flexible method for cleaning refrigerants where the refrigerants will be transferred between appliances with different ownership; the potential adoption of a third-party certification program for reclaimers; and the potential adoption of a third-party certification program for laboratories.

The majority of commenters offered support for EPA's efforts, while expressing concern on a number of specific issues. One commenter expressed support for EPA's focus on the consumer by providing greater flexibility for technicians. Four commenters stated their approval for EPA's efforts to use the Industry Recycling Guide-2 (IRG-2) as the basis for the proposal; however, these commenters noted that certain elements of IRG-2 were omitted from the proposal and expressed concern for the potential of increased contamination in the refrigerant supply that could ultimately damage the environment. Several commenters did not believe that EPA had fully considered the impact of the proposal on industrial process refrigeration equipment or on large manufacturing facilities. A commenter representing the scrap metal recycling industry, specifically noted approval for EPA's efforts to reduce costs and burdens for the industry and believes that this action will encourage compliance with EPA refrigerant regulations. Commenters supported EPA's recognition of industry advances, equipment improvements, and continued advances in the options available to meet customers' needs, and specifically expressed support for EPA's efforts to update the refrigerant recovery/recycling equipment standards by adopting ARI Standard 740-1995. One commenter, who generally expressed approval for the proposed new certification programs for laboratories and refrigerant recovery/recycling equipment, expressed concern that some elements of the proposal may cause hardships for the refrigeration and air-conditioning industry.

Several commenters did not support portions of the NPRM. One commenter stated that EPA should not be in the business of consumer protection and believed that the Agency's proposed actions run counter to the goals of environmental protection. A couple of commenters were concerned that the comment period was too short and stated concerns regarding their ability to fully consider and address all the issues related to the proposed rulemaking during a thirty-day comment period.

EPA received two requests to extend the comment period for the NPRM.

EPA contacted the commenters after receiving the request for additional time. EPA informed them that while the official comment period would remain 30 days, EPA would accept and respond to comments received after the close of the comment period as long as those comments were received within a reasonable time frame. In today's action, EPA has included consideration and discussion of all comments, including those that were received after the close of the official comment period.

EPA received comment indicating that the refrigerant purity requirements and the sales restriction are basically consumer protection requirements, and that EPA should turn the issue over to the Consumer Products Safety Commission. The commenter believes that EPA may be going beyond its enabling legislation by establishing rules that are aimed at protecting consumers, rather than the environment. Specifically, the commenter believes that the purity of resold recovered refrigerants should not be the interest of EPA since EPA is chartered to protect the "purity of our environment." The commenter further stated that EPA's actions could result in "promoting rather than eliminating refrigerant dumping into the atmosphere," since according to this commenter, "most refrigerant being recovered from air-conditioning and refrigeration equipment is being vented, and the lack of refrigerant reclamation is a result of the lack of financial incentives for reclamation." The commenter believes that this situation is encouraged by manufacturers' associations that are sabotaging efforts to reuse refrigerants. The commenter also questioned the timing of the NPRM and the lack of an Agency requirement for sound service practices such as proper evacuation before charging appliances, installation of filter-dryers, and other proper service techniques.

EPA does not believe that the proposed requirements go beyond the Agency's statutory authority. Under section 608(a) of the Act, as amended in 1990, EPA is required (by no later than January 1, 1992) to promulgate regulations establishing standards and requirements that will maximize the recapture and recycling of refrigerants during the service, repair, or disposal of appliances and industrial process refrigeration equipment. EPA believes that the standards promulgated in the initial final rulemaking (58 FR 28660; May 14, 1993) properly implemented this statutory mandate. The NPRM was based on new developments between

1993–1996 and recognizes that today there are more options available that still maximize the recapture and recycling of refrigerants without compromising the goals of protecting human health and the environment, including the adoption of updated versions of industry specifications for refrigerants and recovery equipment certification (*i.e.*, ARI Standard 700–1995 and ARI Standard 740–1995, respectively). Furthermore, in the May 14, 1993 final rule and the February 29, 1996, direct final rule, EPA noted that the reclamation requirement encourages careful handling of refrigerant and prevents irretrievably contaminated (for instance through mixture with other refrigerants) refrigerant from being introduced into the marketplace, where it could lead to damage to equipment and eventual venting of refrigerant (58 FR 28679; May 14, 1993 and 61 FR 7725; February 29, 1996).

While some of the options discussed in the NPRM (61 FR 7859) clearly would help protect the owners and operators of the appliances (those that EPA believes the commenter has characterized as consumers), the essence of these requirements is not consumer protection, but remains protection of human health and the environment, consistent with EPA's mission. Today's final rule does not change the refrigeration sales restriction requiring that used refrigerant be reclaimed by a certified reclaimer prior to sale to a new owner; therefore, consumers will be afforded a level of protection since this rule restricts the transfer of used refrigerant. While this constitutes an ancillary consumer benefit worth noting, the primary goal of today's action is to minimize the release of ozone-depleting substances to the lowest achievable level by preventing equipment damage and subsequent refrigerant release. Without monitoring the quality of used refrigerant, substandard refrigerant may be charged into an appliance, and the consequent damage to the appliance may result in release of the ozone-depleting refrigerant.

EPA does not share the commenter's belief that today's action will result in the promotion rather than the elimination of illegal refrigerant venting. The phaseout of class I refrigerants has made these refrigerants a commodity worth recovering, and the Agency believes that the marketplace will dictate similar results as class II refrigerants are phased out. A requirement that used refrigerant meets a standard set of specifications, prior to resale, will insure that less venting occurs as a result of equipment failure

caused by contaminated refrigerant that would otherwise have been transferred to a new owner without being reclaimed.

In addition, reports provided to EPA do not lead the Agency to believe that there is a lack of reclamation or economic incentives for reclamation. There are more than 50 EPA-certified reclaimers in the United States, who reported that approximately 2.0 and 6.1 million pounds of R–12 and R–22, respectively, were reclaimed during 1999. Similar reports reveal that approximately 1.7 and 7.1 million pounds of R–12 and R–22, respectively, were reclaimed during 2000. Reclamation trends lead the Agency to believe that while reclamation of class I refrigerants will decrease as stocks decrease, that future reclamation of all refrigerants will continue in the foreseeable future.

EPA agrees that sound and responsible service practices are important. EPA has a section of the regulations devoted to required practices (*i.e.*, § 82.156) and requires that technicians follow practices that are designed to reduce the emissions of ozone-depleting substances. EPA hopes that all technicians and contractors comply with reasonable service standards established and adopted by the industry, as well as standards established by EPA to ensure that the highest degree of responsible service is provided. For these reasons, EPA believes that today's action is consistent with the Agency's mandate under the Act.

EPA received comments that supported EPA's efforts while noting that EPA must consider the impact of the NPRM on the industrial process refrigeration industry as well as on other segments of the entire air-conditioning and refrigeration industry. Commenters stated that EPA may have proposed a rulemaking that addressed the concerns and needs of the commercial and residential refrigeration sectors without full consideration of the impacts and potential application of the proposed requirements to other segments of the industry and will do little to assist in the goals of introducing greater flexibility for the industrial process refrigeration industry.

EPA understands these concerns and has been careful to consider the impacts of today's action on the owners and operators of industrial process refrigeration equipment. For example, this rule allows greater flexibility by allowing the transfers of refrigerants between parent companies and their subsidiaries. The community affected by regulations promulgated under section

608 is diverse. Since promulgating the initial final rulemaking in 1993, EPA has amended the regulations several times to address the various needs of specific sectors. For example, in recognition that industrial process refrigeration equipment is custom-built, the August 8, 1995, amendments, to the leak repair requirements (60 FR 40420), provided additional time for owners and operators of industrial process refrigeration equipment to repair, retrofit, or retire equipment when replacement parts are not readily available. EPA believes that the Agency has recognized the diversity of the affected community, and, where appropriate, has tailored specific regulatory actions to address the uniqueness of the affected community.

EPA received a number of comments on the NPRM. EPA addresses many of the issues raised in comments in the preamble of this final rule. EPA also addresses comments in the corresponding *Industrial Recycling Guide-2 Comment Summary* document. This document may be found in EPA Docket Number A-92-01 VIII.

V. Final Rule

A. Contractor Reclamation and Third-Party Certification Programs

EPA proposed more flexible requirements, based on industry guidelines, for recycling refrigerants in the February 29, 1996 NPRM (61 FR 7858). EPA proposed to permit contractors to recycle refrigerants, draw a representative sample of the refrigerants, send the sample to a laboratory that would be certified by an EPA-approved certifying entity, and where the refrigerant sample met the criteria established by ARI Standard 700, to sell the refrigerant and charge the refrigerant into an appliance owned by someone other than the owner of the appliance from which the refrigerant was initially recovered. EPA stated in the NPRM that this approach, based on IRG-2, would provide greater flexibility for contractors and technicians while maintaining the integrity of the refrigerant supply. The proposed protocol relied on recordkeeping and reporting requirements concerning the custody and control of the refrigerant. This proposed protocol would have provided an alternative to the current requirements to send recovered refrigerant to a reclamation facility prior to selling and installing that refrigerant into an appliance with different ownership. Central to this approach was the proposed adoption of third-party certification programs for both laboratories and reclaimers. As

proposed, EPA would rely on the technical knowledge of approved third parties to ensure the capabilities of the certified laboratories and reclaimers.

EPA received several detailed comments regarding the proposed structure of and likely participation in these third-party programs. EPA received comments both favoring and opposing contractor recycling and the two third-party certification programs for laboratories and reclaimers. Many commenters suggested changes in the proposed structure for the program and various ways to modify programmatic requirements while still ensuring that refrigerant purity is maintained. Several commenters identified specific concerns regarding the appropriateness of delegating various functions to private-sector third-parties and whether EPA may unintentionally establish a monopoly in a case where only one entity has shown interest in becoming a third party certifying organization. A few commenters opposed the proposed rulemaking, because they believed that the proposal would establish two different reclamation standards: one for contractors and another for refrigerant reclaimers, thus hurting contractors and wholesalers as well as penalizing companies that attempt to comply with the goals of the Act.

These comments have prompted EPA to more broadly explore variations on the proposed program that could meet the needs of both the regulated community and the Agency without compromising the goals of environmental protection, (as noted above, all comments submitted in response to the February 29, 1996, NPRM are contained in Air Docket A-92-01). Therefore, at this time, EPA is not prepared to promulgate final requirements for the following three provisions: (1) The potential adoption of a more flexible method for cleaning refrigerants where the refrigerants will be transferred between appliances with different owners; (2) the potential adoption of a third-party certification program for reclaimers; and (3) the potential adoption of a third-party certification program for laboratories. EPA has decided to separate these three issues from the rest of the NPRM and to complete action on these three provisions in either a separate final rule or possibly by re-proposing some or all of these three items.

This decision to separate these three items is not a signal of the Agency's agreement or disagreement with any of the comments received. EPA is merely indicating a need to further consider these comments prior to taking final action on any of these three proposed

provisions. EPA believes a flexible approach to reclamation can be developed that avoids any perceived inappropriate delegations of authority and also does not preclude competition. To ensure that the public has adequate opportunity to comment, if EPA pursues a structure that varies significantly from what was discussed in the February 29, 1996, NPRM, EPA will issue a revised proposal and provide additional opportunity for comments.

Since EPA is not finalizing action on contractor reclamation or the related provisions for third-party certification of reclaimers and laboratories through today's action, EPA is not responding at this time to the comments the Agency received regarding these three items. When EPA takes additional action with regard to these provisions, EPA will respond to the comments in the accompanying notice.

While EPA clearly believes it is appropriate and necessary to delay action on these three items, it has taken steps to avoid a lapse in the current reclamation requirements. Such a lapse could result in widespread contamination of the stock of CFC and HCFC refrigerants. Such contamination could cause extensive damage to air-conditioning and refrigeration equipment, release of refrigerants, and refrigerant shortages with consequent price increases. Release of CFC and HCFC refrigerants has been found to deplete stratospheric ozone, resulting in increased human and environmental exposure to ultraviolet radiation. Increased exposure to ultraviolet radiation in turn can lead to serious health and environmental effects. Therefore, in a separate rulemaking published in the **Federal Register** on December 27, 1996 (61 FR 68506), EPA extended the effectiveness of the current refrigerant specifications indefinitely.

B. Definition of Reclaim and Adoption of the ARI Standard 700 Specifications for Fluorocarbon and Other Refrigerants

In the NPRM, EPA included a change to the definition of "reclaim," at § 82.152, that included a reference to the updated ARI Standard 700-1995. EPA proposed, in the subsequent "substitutes" proposed rule (63 FR 32058; June 11, 1998), to amend the definition of "reclaim" to reflect the update of the refrigerant specifications standards at appendix A from standards based on ARI Standard 700-1993 to standards based on ARI Standard 700-1995, and to clarify that to "reclaim" refrigerant means to reprocess the refrigerant to all of the specifications of the appendix. The Agency did not receive any comments specifically

addressing the proposed amendment to the definition of "reclaim" in either of the proposed rulemakings.

EPA believes that it is pertinent to take final action to clarify the definition of "reclaim" in this final rule, since the Agency has found that many in the regulated community believe that purity and/or reclamation equates to characterization of the used refrigerant with the use of a gas chromatograph, while ignoring the presence or failing to test for the presence of various contaminants as required by today's action and delineated in appendix A (*i.e.*, water, chloride, acidity, high boiling residue, particulates/solids, non-condensables, and other impurities including other refrigerants). Therefore, EPA has chosen to amend the definition in the rule being promulgated today, due to the definition's close association with IRG-2 and the importance of the clarification as it applies to refrigerant reclamation and the transfer of used refrigerant.

EPA is adopting the ARI Standard 700-1995, with modification, into regulation as appendix A of 40 CFR part 82, subpart F. At this time, EPA is not adopting the ARI Standard 700-1995 requirements for refrigerant blends that were not included as a part of the initial May 14, 1993, final rule. The adoption of refrigerant blends into appendix A of 40 CFR part 82, subpart F was proposed in the NPRM for the "substitutes" rule (63 FR 32064; June 11, 1998) and will be discussed in a subsequent rulemaking.

EPA has always interpreted 40 CFR 82.154(g) and 82.164 to require persons who "reclaim" refrigerant to reprocess the refrigerant to *all* of the specifications of appendix A (based upon the ARI Standard 700-1993 and now the 1995 version of the Standard) that are applicable to that refrigerant and to verify that the refrigerant meets those specifications using the analytical methodology prescribed in section 5 of appendix A (*i.e.*, Appendix-93 to ARI Standard 700-1993 and now Appendix-C to the 1995 version of the Standard) or alternate test methods that produce equivalent results. Therefore, EPA has amended the definition of "reclaim" by removing the reference to a "purity" standard and thereby making the definition more consistent with the full range of requirements provided in appendix A. Failure to abide by these protocols to assure that used refrigerant meets the requirements of appendix A, based upon the ARI Standard 700-1995, and may violate the prohibition against the sale of used refrigerant that has not been "reclaimed" (established under § 82.154(g)). This amendment to the

definition of reclaim does not add additional requirements upon reclaimers, but ensures that the regulations explicitly reflect EPA's long standing interpretation of what constitutes "reclaimed" refrigerant.

C. Revocation and Suspension Procedures

Under 40 CFR part 82, subpart F, failure to abide by any of the provisions of subpart F may result in the revocation or suspension of EPA approval for technician certifying programs, recovery/recycling equipment testing organizations, as well as self certifications by refrigerant reclaimers. The NPRM contained specific revocation and suspension procedures for both the existing recovery and recycling equipment and the technician certification programs, as well as for the proposed third party laboratory and reclaimers programs.

In cases of revocation or suspension, EPA proposed that the Agency notify the certification program in writing regarding the action. The NPRM also specifies procedures concerning the proposed methods for a previously approved certification program to challenge a decision of revocation or suspension. In such cases, the NPRM stated that the program could request a hearing within 30 days; however, the program would have to submit in writing the program's objections and supporting data. If, after review of the request, the Agency agreed that the program had raised a substantial and factual issue, EPA would provide a hearing and assign a Presiding Officer. The Agency could direct that all arguments and presentation of evidence be concluded within a specified time of no less than 30 days from the date that the first written offer of a hearing was made and could direct that the decision of the Presiding Officer would be final. EPA proposed that the decision of the Presiding Officer would be final without further proceedings, unless there was an appeal or motion for review by the Administrator within 20 days of the decision. On appeal, EPA proposed to provide the Administrator with all the powers that he or she would have in making the initial decision, including the discretion to require or permit briefs, oral arguments, the taking of additional evidence, or the remanding to the Presiding Officer for additional proceedings. EPA requested comments on these procedures.

EPA proposed that these procedures would apply to section 608 technician certifying programs, equipment testing organizations, the proposed laboratory certification program, and the

certification of reclaimers. However, since EPA is not promulgating third-party certification programs for either laboratories or reclaimers at this time, EPA is not establishing revocation procedures for these programs through today's action.

EPA received comment indicating that the revocation procedures should provide for the consideration of legal as well as factual issues. The final procedures state that EPA will give notice of the basis for the revocation or suspension in advance, and that the program will have an opportunity to demonstrate or achieve compliance with the provisions of subpart F. The program may raise legal issues in responding to EPA's notice.

EPA received comment indicating that the provisions should specify minimum qualifications for, and impartiality of, presiding officers. The commenter states that the presiding officer should be an attorney, preferably an administrative law judge, and should be independent of EPA's enforcement branch or the Department of Justice.

EPA understands this commenter's concerns; however, EPA disagrees with the need to include these criteria. EPA does not believe that it is necessary to specify prerequisites that the Administrator should use for determining who is an appropriate presiding officer. EPA believes that the Administrator will use her best judgement to ensure that a presiding officer is someone who can effectively act in an impartial manner and possesses appropriate knowledge to carry out all necessary duties.

The same commenter also indicated that the procedures for appealing adverse decisions are evidence that the regulations are too detailed. The commenter believes the regulations should be scaled back to impose only those requirements that the commenter believes protect the environment. However, the commenter further noted that the procedures seem fair and appropriate. The commenter states that this is the only program, established under the Clean Air Act, that specifies revocation procedures.

EPA first notes that there are other programs established under authority of the Clean Air Act that specify revocation procedures (*e.g.*, the mobile source regulations at 40 CFR 86.094-30(c)(1)-(5), referencing the hearing procedures at 40 CFR 86.078-6). When drafting the procedures applicable to subpart F of part 82, EPA reviewed where and how similar procedures have been used. Moreover, EPA believes that these regulations, taken in their entirety, serve to protect human health and the

environment, and that providing regulatory text consistent with current practices does not alter that degree of protection. The Agency's ability to suspend or revoke programs based upon their noncompliance with EPA regulations further safeguards the environment.

Through today's action, EPA is promulgating procedures to revoke approval, of third-party certification programs for technician certifying programs and equipment testing organizations and self-certification by refrigerant reclaimers, based on failure to comply with the provisions of 40 CFR part 82 subpart F. Revocation procedures are established for approved equipment testing organizations, technician certifying programs, and reclaimer self-certifications by amending 40 CFR 82.160(d), 82.161(e), and 82.164(g). In developing this final rule, EPA decided to apply the procedures to the revocation or suspension of self-certification of reclaimers, as well as the existing third-party certification programs for technician certifying programs and testing organizations for refrigerant recovery/recycling equipment. Accordingly, today's action includes procedures for the revocation and/or suspension of programs approved to certify technicians, programs approved to certify recovery and/or recycling equipment, and self-certification of refrigerant reclaimers. EPA believes that this broader approach will safeguard the environment by establishing greater oversight of reclaimers and third-party certifying programs.

D. Technician Certification and the Sales Restriction

EPA received comments concerning technician certification and the sales restriction that were beyond the issues presented in the NPRM. Comments concerning exemption of the technician certification requirements and the applicability of refrigerants under the Significant New Alternatives Policy (SNAP) will not be addressed in this final rule, but are addressed in the accompanying *Industrial Recycling Guide-2 Comment Summary* contained in EPA Docket Number A-92-01 VIII. All comments that address aspects of the proposed regulatory changes are discussed below.

1. Recordkeeping

EPA stated in the NPRM that the Agency is concerned with the maintenance of records¹ by approved

certifying programs for technicians that no longer administer the section 608 certification test. Currently, there are more than 90 EPA-approved technician certification programs that provide testing in accordance with § 82.161 and appendix D to subpart F. These programs administer and grade tests, maintain records, issue certification credentials, and submit reports to EPA twice per calendar year. It has come to the Agency's attention that since the bulk of existing technicians has become certified, and the certification market now focuses on those first entering this field, some EPA-approved certification programs may choose to discontinue providing this service. EPA believes that the likelihood of programs withdrawing will increase over time. EPA stated in the NPRM that if a technician's certification credentials are lost and the program no longer exists, it may not be possible for the technician to receive duplicate credentials, thus denying the technician the ability to purchase class I or class II refrigerants or to legally perform aspects of his or her job.

Currently, programs that have been approved to administer the test must maintain records for at least three years (40 CFR part 82, subpart F, appendix D; 58 FR 28734). However, EPA does not believe that a mechanism exists that would effectively ensure that these records are maintained and are made available to EPA if a program goes out of business. Furthermore, even if the program does continue to maintain the records, access to the records may be difficult if the program itself no longer exists. Therefore, EPA proposed options aimed at ensuring that technicians can receive replacement credentials in instances where their certifying program is no longer in business or in instances where the request for the records exceeds the three-year minimum recordkeeping provision.

EPA discussed several options in the NPRM and requested comment. The first two proposed options would require maintenance of records by EPA. First, EPA could require programs leaving the certification business to forward their records to EPA, and thus the Agency would be responsible for maintaining those records. In the NPRM, EPA noted that the Agency may not have adequate resources for maintaining these records effectively. A second option would be to have the programs send the records to EPA and have the Agency choose a suitable existing certification program to

maintain the records and forward the records to that program. EPA stated in the NPRM that the Agency is uncertain as to what criteria should be used for choosing the appropriate program. With more than 90 existing programs, all approved based on the same criteria, EPA would have difficulty in selecting a single program.

A third option would be to have the program that intends to cease operation identify an active program that is willing to accept the records and notify EPA. In this scenario, all pertinent information, including the records relating to the technicians and the testing information would be forwarded to another program. The program discontinuing certification activities would notify EPA of the identity of the certification program that it had identified as the new repository of its records, and the recipient of the records would notify EPA upon receipt of the records. EPA stated in the NPRM that the third option represented the most equitable approach. Therefore, EPA proposed to promulgate the third option. In addition, EPA requested comments regarding whether EPA should extend the minimum length of time that records must be maintained beyond the three-year minimum requirement.

The Agency received several comments supporting option one, but none specifically addressing whether or not EPA should select an appropriate program for the transfer of the records, as detailed in the second proposed option. In response to the first proposed option, one commenter stated that EPA's unwillingness to store certification records is evidence that third party certification of technicians should not be required.

EPA certainly supports the maintenance of records stating which certifying programs have certified which technicians, but EPA is reluctant to have information regarding each individual technician and their test scores maintained by the Agency. In addition, EPA does not believe the Federal government should develop a central registry or database for certified technicians. EPA's reluctance to maintain such a database is based in part on a discussion held during a meeting on April 3, 1995. That meeting was a forum for the EPA-approved section 608 technician certification programs to discuss concerns with EPA regarding the section 608 technician certification program. At that meeting, several representatives of approved technician certification programs expressed their desire to have the programs maintain information rather

¹ Certifying programs must maintain records that include, but are not limited to, the names and

addresses of all individuals taking the tests, the scores of all certification tests administered, and the dates and locations of all testing administered.

than EPA. The concept of a national database was discussed and rejected by those directly involved in the certification process. Many of the programs were in operation prior to the 1993 EPA mandate for technician certification; hence, they had maintained such records and representatives felt that the continuing maintenance of such records should remain in the hands of certifying programs. Memoranda concerning the meeting can be found in Air Docket A-92-01.

In response to the third proposed option, one commenter stated that EPA should not impose a recordkeeping burden it is not willing to assume itself. EPA believes that the maintenance of technician certification records would be more efficiently managed by an existing technician certifying program. EPA's decision to propose the third option was consistent with the belief that those that already maintain such records may have data storage and retrieval mechanisms in place that would allow them to efficiently manage record maintenance, as well as the personnel required to handle the volume of inquiries and production of duplicate certification credentials.

Another commenter stated that if EPA would not keep the records, then they have relatively little value. The commenter suggested instead that the technician or their employers make a photocopy of the documents and put it in a file. The commenter believes that EPA should rely on the technicians and their employers to maintain whatever records are necessary.

As to the value of the records, EPA uses the aggregate data submitted by each approved program to monitor the effectiveness of the certification program and to compile information for subsequent changes to the section 608 technician certification test bank. The test bank is maintained by the Agency and is provided to testing organizations in order for the programs to formulate and test technicians in accordance with appendix D of 40 CFR part 82, subpart F.

EPA would like to clarify that the NPRM addressed possible changes to the maintenance of records by certifying programs that no longer offer section 608 certification testing not to the technician's requirement to maintain technician certification cards at the technician's place of business, as required by § 82.166(l). EPA agrees that the technician and, where appropriate, the employer should maintain copies of the credentials themselves to prevent difficulties resulting from lost or misplaced cards. The Agency recognizes

that the potential exists for documentation to be lost; however, the recordkeeping requirement at § 82.166(l) does not offer a mechanism to replace lost credentials. EPA believes that it is prudent to have a mechanism to replace the cards so that the technician does not incur the burden of repeating the certification test. EPA also believes that requiring the entity that issues the credentials to also maintain supporting records on technicians that they certify will provide such a mechanism.

EPA also received several comments supporting the third proposed option to allow the records transfer and the subsequent maintenance of records by other EPA-approved certification programs rather than by EPA directly. Two commenters supporting this procedure raised concerns about notification of how to access transferred records. The first stated that the proposed requirement was necessary to ensure the reasonable availability of backup records for technicians requiring duplicate credentials by putting the onus on the discontinued program to see that the records are maintained. The commenter also stated that a mechanism to notify technicians would be necessary. Another commenter raised concerns regarding notification. The commenter stated that it is critical that programs no longer in operation notify EPA and technicians who they have certified.

EPA agrees that programs no longer in operation must notify EPA and is adding this requirement to appendix D in subpart F under the Recordkeeping and Reporting Requirements. This notification requirement will make it easier for the community and regulators to obtain this information directly from the Agency instead of trying to locate each individual technician. EPA hopes that both programs that no longer offer certification and those that voluntarily receive records choose to contact technicians certified under their programs. However, EPA questions the effectiveness of requiring those that are exiting the business to notify technicians. For example, if a previously approved program declares bankruptcy, it would be difficult to enforce such a requirement. Therefore, through today's action, EPA is encouraging programs exiting the certification business to inform technicians about where and how to receive duplicate credentials. In addition, EPA will continue to provide information on defunct programs on its factsheets and websites.

One commenter asked what would happen if no other program wished to accept the records of a program that no

longer offered the certification test. EPA communications with the section 608 technician certification programs and comments received on this action indicate that several of the approved programs are willing to accept the responsibility for maintaining this information, but if such a scenario arose, the program would be required to submit the records to EPA where they would be maintained by the Agency until such a time that the Agency could identify a program that would be willing to accept the responsibility and maintenance of such records.

EPA received a few comments regarding extension of the recordkeeping provision beyond three years for technician certification programs. One commenter requested that the Agency require maintenance of the records for at least seven years or preferably indefinitely. Another commenter stated that the Agency should not require a longer retention than the current three-year requirement, especially if the Agency is not willing to retain the records on behalf of programs no longer offering technician certification.

It should be noted that prior to today's final rule, the recordkeeping requirement of appendix D of 40 CFR part 82, subpart F calls for a minimum record retention time frame of three years. In the Agency's day-to-day dealings with the technician certifying organizations, EPA has yet to find a testing organization that does not maintain records on a permanent basis, which for most programs well exceeds the minimum three year period. In response to voluminous requests for programs to assist technicians who have lost their credentials, the Agency has found that operating programs, and especially the more senior programs that existed prior to EPA regulation in 1993, have been able to produce records that date back to their inception. Since the permanent maintenance of certification records appears to be standard operating procedure for section 608 certifying programs, EPA does not believe that an additional significant burden would be placed on certifying programs for technicians by requiring that records be maintained for longer than three years minimum.

Through today's action, EPA is requiring that organizations no longer offering the section 608 technician certification exam notify EPA of their intent to cease operation. The Agency is also establishing a process for the transfer of records for programs exiting the section 608 technician certification business. Such programs will be required to forward records to another

approved program and notify EPA as to which program the records have been given. Programs receiving records from a defunct program will also notify EPA. If no other program is willing to take those records on behalf of the defunct program, the program must forward the records to EPA. In these instances EPA will maintain this information and make it available to technicians as appropriate, until such a time when EPA can locate a program that is willing to accept responsibility and maintenance of the records. EPA is also extending the recordkeeping requirement of appendix D for certifying programs beyond the current three year period by requiring these programs to maintain records for as long as they are in business.

2. Sales Restriction on Refrigerants Approved for Use With Motor Vehicle Air Conditioners (MVACs)

In the NPRM, EPA stated that the Agency was concerned with the ability of technicians certified under a section 609 technician certification program, in accordance with § 82.40, to purchase any ozone-depleting refrigerant in any size container. EPA is concerned with reports that technicians with section 609 certifications are purchasing refrigerants that are not acceptable for use in MVACs, and that such refrigerants are either being improperly installed in MVACs or used by those technicians to service other appliances in violation of the regulations promulgated under Section 608. At the time that the sales restriction was drafted and promulgated in 1993 (58 FR 28714; May 14, 1993), EPA was aware that potential substitutes for R-12 for use in MVACs could include HCFC refrigerants or a refrigerant blend with an HCFC component. Therefore, EPA did not restrict the types of refrigerants that could be purchased by those with section 609 certification. Since that time, EPA has promulgated regulations—the Significant New Alternatives Policy (SNAP)—regarding acceptable and unacceptable alternatives to class I and class II refrigerants in specific refrigeration and air-conditioning end uses, under section 612 of the Act. Since SNAP now clearly delineates which refrigerants are acceptable for use as substitutes to R-12 in MVACs, EPA proposed that the sales restriction should employ a similar provision.

EPA received one comment asking that the Agency review the statutory provision (section 609(e)) barring the sale of small containers of R-12 (and other class I and class II substances suitable for use in MVACs) to anyone

other than a technician who has been properly trained and certified under section 609. The commenter requested that EPA lift the restriction on sales of small containers.

EPA has no authority to promulgate regulations that are inconsistent with the statutory language. Therefore, the sales of small containers of class I and/or class II refrigerants must remain restricted pursuant to Section 609(e) of the Act.

EPA received one comment requesting that EPA clarify that SNAP acceptability is not the criterion to decide which substitute refrigerants may be purchased by technicians certified under section 609. The commenter stated that EPA had proposed to specify that MVAC technicians may purchase only those substitute refrigerants that are used in MVACs whether or not the refrigerants have been approved under SNAP.

The Agency proposed to amend the sales restriction to specify that section 609 certified technicians may only purchase CFC-12 (R-12) or SNAP-approved substitutes containing ozone-depleting refrigerants that have been found suitable for use in MVACs. EPA proposed (61 FR 7873) to modify the sales restriction, found at § 82.154(m)(3), to restrict the sale or distribution or the offer for sale or distribution of class I and class II refrigerants to technicians certified by a program approved under § 82.40 and certified in accordance with § 82.34 (*i.e.*, 609 technicians). The modification limits refrigerant purchases, by section 609 technicians, to R-12 and substitute refrigerants, containing a class I or class II substance, that are listed as acceptable for use in MVACs in accordance with all regulations promulgated under section 612 of the Act.

EPA received several comments supporting the proposed change to the sales restriction. Commenters stated that it was appropriate to distinguish between refrigerants used by technicians certified by a section 609 certification program and those certified in accordance with the requirements promulgated under section 608. One commenter stated that the result of EPA's proposed modification would be that the sales restriction would not apply to any refrigerant listed as acceptable under SNAP that did not consist in whole or in part of a class I or class II substance, such as the HFC refrigerant R-134a.

EPA would like to clarify that the sales of refrigerants (including HFC refrigerants such as R-134a) are not currently regulated under the sales restriction unless the refrigerant consists

in whole or in part of a class I or class II substance (such as the case with several SNAP-acceptable refrigerant blends). EPA proposed a sales restriction on substitute refrigerants on June 11, 1998 (63 FR 32044), and the sales restriction for substitute refrigerants will be addressed in the final version of that proposed rule.

Therefore, through today's action EPA is amending the refrigerant sales restriction by amending § 82.154(m). EPA is further restricting the sale or distribution or the offer for sale or distribution of class I and class II refrigerants, that are suitable for use in MVACs, to technicians certified by a program approved under § 82.40 and certified in accordance with § 82.34 (*i.e.*, section 609 certified technicians). In accordance with 40 CFR 82.34(b), this modification limits refrigerant purchases, by such section 609 technicians, to CFC-12 (*i.e.*, R-12) and substitute refrigerants, containing a class I or class II substance, that are listed as acceptable for use in MVACs in accordance with all regulations promulgated under section 612 of the Act. Furthermore, only technicians certified under section 609 are allowed to purchase such ozone-depleting refrigerants in containers containing less than 20 pounds of such refrigerant, in accordance with § 82.34(b).

3. Transfers Between Subsidiaries

EPA proposed to permit transfers of used refrigerant between wholly-owned subsidiaries, without requiring refrigerant reclamation prior to such a transfer. As discussed in the NPRM, this proposal arose from specific requests for such relief that EPA had received from several entities that are organized as holding companies with wholly-owned subsidiaries. After considering such requests, EPA stated that the relationship between two subsidiaries should provide sufficient means to ensure that transfers between the subsidiaries would be "akin to transfers within one company." Therefore, EPA proposed to provide an exception to the sales restriction for the transfers of refrigerant between two wholly-owned subsidiaries of the same holding company.

EPA also received requests to permit the transfer of unreclaimed used refrigerant between subsidiaries that are not wholly-owned by the same holding company. As discussed in the NPRM, given that these types of subsidiaries would involve other investors who might have less of a commitment to each of the subsidiaries involved in the transactions, EPA did not believe that transfers between these types of

subsidiaries would be “akin to those within one organization.” Therefore, EPA limited the proposed exception to wholly-owned subsidiaries.

EPA received comments regarding the proposal to allow the transfer of unreclaimed used refrigerant between two wholly-owned subsidiaries of the same holding company. One commenter noted that a holding company is a company that exists solely to control a partial or complete interest in other companies. The commenter delineated the type of company classified as a holding company from those considered to be a parent company by noting that by comparison, “a parent company generally has a business purpose beyond merely holding a partial or complete controlling interest in other companies.” The commenter did not believe that there is any environmental benefit that could occur by limiting the exception exclusively to holding companies or their subsidiaries. Another commenter distinguished between holding companies and chemical manufacturers making a similar point with regard to their business interests.

EPA received several comments questioning why EPA believes it is necessary to limit transfers to wholly-owned subsidiaries. One commenter, stated that EPA’s concerns regarding the transfers of refrigerant are inapplicable in the case of subsidiaries that are majority-owned and/or controlled by a parent corporation. For the purposes of refrigerant transfers, the commenter stated that the ownership dynamic in the case of two majority-owned and/or majority-controlled subsidiaries is no different from that of two wholly-owned subsidiaries. The commenter suggested that EPA revise the regulatory text to permit the transfers of unreclaimed refrigerant between majority-owned and/or controlled entities.

Another commenter, provided a lengthy discussion and several examples of transfers that would not be permitted if the provisions were adopted as proposed. Some of these scenarios included transfers involving the parent company, transfers involving a combined batch of refrigerant that mixes refrigerant drawn from equipment with various ownership within the corporate family, and transfers amongst various majority-owned subsidiaries.²

² EPA has responded fully to the scenarios identified in these comments. However, due to the length of the comments, EPA does not believe it is practical to provide a detailed summary of each scenario described by the commenter in this preamble. A complete copy of the comments identified by docket number VIII-I-13 as well as the accompanying “Response to Comments

The commenter noted that even though it owns less than 100% of some of its subsidiaries, the company has a strong interest in not damaging the refrigeration appliances, particularly those that are located at the parent facility and operated by the parent company personnel. The commenter stated that in order to use its supply of R-12 efficiently, it would like to store the recovered refrigerant together, regardless of whether it comes from an appliance owned by the parent or owned by a subsidiary. The parent would then be able to transfer the refrigerant to another plant owned either by the parent or by a subsidiary. The commenter indicated that what is important is that the knowledge of the refrigerant quality is transferred with the refrigerant, and therefore EPA should draft language that states that transfers between and amongst parent companies, wholly-owned subsidiaries and majority-owned subsidiaries, should be permitted.

The intended effect of EPA’s proposal was to create an exception from the sales restriction for transfers that were “akin to those within one organization.” EPA agrees with the commenters that transfers between a parent company³ and its subsidiaries and amongst the subsidiaries of the same parent company should be permitted regardless of whether the parent company is a holding company. EPA believes that transfers between subsidiaries having the same ownership as well as transfers between a subsidiary and the parent company are indeed akin to those within one organization. The owner, being the parent company, has a financial investment and incentive to protect the well being of their air-conditioning and refrigeration equipment, regardless of which subsidiary holds and operates the equipment. Therefore, through this action, EPA has modified the regulatory language at § 82.154(g) to permit transfers between a parent company and one of its subsidiaries or between subsidiaries having the same parent company. Similarly, EPA has added a definition of the term “parent company” at § 82.152.

In light of the points made, the Agency has decided that it would be

Document” is located in the EPA Air Docket: A-92-01.

³ For purposes of the refrigerant sales restriction at § 82.154(g), the following definition apply: a “parent company” means an individual, corporation, partnership, association, joint-stock company, or an unincorporated organization that can direct or cause the direction of management and policies of another entity, through the ownership of shares or otherwise.

more consistent with the Agency’s intent, to broaden the exception to the sales restriction for the transfers of refrigerant. In doing so, majority-owned and majority-controlled subsidiaries will be treated the same as wholly-owned subsidiaries. EPA’s rationale for this decision is based on common financial interests of majority owned and majority controlled subsidiaries. EPA agrees with the commenters and believes that transfers among these subsidiaries are “akin to transfers within one company.” These subsidiaries have a strong economic interest in not damaging the appliances owned by another subsidiary. EPA agrees with the commenters that majority-owned and majority-controlled subsidiaries should be treated the same as wholly-owned subsidiaries for the purposes of refrigerant transfers. Therefore, through today’s action, EPA is making the necessary changes to the regulatory text at § 82.154(g) and § 82.152 to ensure that such transfers can legally occur without prior reclamation of the refrigerant.

4. Transfers Between Federal Facilities

While EPA proposed to permit the transfer of unreclaimed refrigerant between subsidiaries, the Agency did not address the transfer of refrigerants between different Federal facilities owned by the same Federal agency. EPA received comment from the Department of Energy (DOE) requesting that the sales restriction exemption for the transfer of refrigerant between subsidiaries be extended to transfers between government-owned facilities including government-owned contractor-operated facilities. DOE stated that the majority of their facilities are operated by contractors, and the transfers between these entities are akin to transfers between subsidiaries of a parent company.

EPA believes that it is reasonable to consider the transfer of refrigerant between federally-owned facilities as akin to transfers between subsidiaries of a parent company. Therefore EPA has added an exemption to the prohibition at § 82.154(h)(4) to allow for the transfer of refrigerant between facilities owned by the same Federal agency or department. This exemption will hold as long as the facilities involved in the transfer of used refrigerant are owned by the same Federal agency or department. The facilities need not be operated by employees of the Federal facility or department, as long as such facilities are ultimately under the control of the same Federal agency or department.

5. Other Comments and Amendments to the Refrigerant Sales Restriction

EPA requested comments on the appropriateness of modifying the sales restriction to limit the types of refrigerants available to technicians certified to service and maintain MVACs under section 609. EPA received one comment regarding § 82.154(m)(2) and (8). The commenter stated that EPA intended to reference § 82.154(n) not (m) and that the two provisions would expire prior to promulgation and should therefore not be promulgated.

EPA would like to clarify that the Agency was correct in referencing § 82.154(m). In the May 14, 1993, final rulemaking, EPA promulgated the prohibition against the sale and distribution of class I or class II substances for use as a refrigerant at § 82.154(n). Subsequent amendments to the regulations resulted in the removal of the prohibition against the sale and distribution of class I or class II substances for use as a refrigerant from §§ 82.154(n) through 82.154(m)(2) and (8) (see regulatory text amendments at 59 FR 55912; November 9, 1994).

In today's action, EPA is amending the sales restriction regulatory text at § 82.154(m), by deleting the two expired subparagraphs ((m)(2) and (m)(8)) and by adding two subparagraphs at (m)(2) and (m)(4). Former subparagraphs (m)(2) and (m)(8) permitted "grandfathered" technicians to purchase refrigerant until May 15, 1995. Since these subparagraphs have expired, this deletion makes no substantive change to the regulations. The subparagraphs that EPA is adding contain exceptions to the sales restriction for persons who employ certified technicians and who comply with the recordkeeping requirement at § 82.166(b). Such persons may purchase refrigerants or have designated representatives purchase refrigerants. As proposed, EPA is providing an exemption to the refrigerant sales restriction for persons who employ at least one section 609 certified technician, provided that the refrigerant is either R-12 or a SNAP-approved substitute for MVACs.

EPA received comments indicating that the prohibitions, at § 82.154(g) and (h), on the sale of used refrigerant that has not been reclaimed by an EPA-certified reclaimer are nearly identical and should be combined. EPA also received one comment requesting that the Agency clarify that refrigerant distributed from salvage facilities be subject to the reclamation requirements for the sale of used refrigerants at § 82.154(g) and (h).

EPA believes that the revised definition of reclaim warrants the combination of paragraphs (g) and (h). Therefore, EPA has combined § 82.154(g) and (h) accordingly. In addition, EPA has always intended the sales restriction on used refrigerant to apply to the sale or distribution or the offer for sale or distribution as specified at § 82.154(m). Therefore, as a point of clarification, EPA has amended § 82.154(g) to specifically include the prohibition to the distribution or offer to distribute used refrigerant. EPA believes that this amendment of § 82.154 simplifies the prohibition.

EPA is also amending § 82.154(m) to include a reference to the § 82.166(b) exception for persons who employ at least one section 608 certified technician. Although the NPRM did not include the reference to § 82.166(b) in proposed § 82.154(m), EPA has included it here in order to enhance the utility of the regulations and make them easier to use by the regulated community. This amendment only references currently existing regulatory language, and does not alter in any way the rights or obligations of any regulated party; therefore, it constitutes a minor technical change.

E. Motor Vehicle Air Conditioner (MVAC)-Like Appliances

MVAC-like appliances are essentially identical to motor vehicle air conditioners (MVACs), which are subject to regulations promulgated under section 609 of the Act. However, because MVAC-like appliances are contained in off-road vehicles, they are not regulated under section 609. Rather, they are subject to regulations promulgated under section 608 of the Act. EPA believes that if the appliance is similar to an MVAC in all relevant respects, it should be treated similarly to an MVAC. Hence, EPA proposed to modify the definition of MVAC-like appliance. Currently, § 82.152 states that, *MVAC-like appliance* means mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of an off-road motor vehicle. This includes the air-conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using R-22 refrigerant. (58 FR 28713).

Commenters sought clarification on what types of appliances the Agency considers as "MVAC-like." The Agency received comments questioning whether § 82.152 can be interpreted to include air-conditioners on mowing, quarrying, and heavy-duty off-road vehicles;

planes; boats; and trolleys. Currently the definition of "MVAC-like appliance" specifically includes agricultural or construction equipment that does not use HCFC-22 refrigerant. EPA believes that mowing and quarrying appliances, planes, boats, and trolleys, that operate with open-drive compressors that are used to cool the driver's or passenger's compartments, and do not use HCFC-22 refrigerant, are similar to MVACs in all relevant respects and should be treated similarly to an MVAC appliance.

EPA believes, however, that the definition of MVAC-like should include an upper limit on the amount of refrigerant contained in the appliance. Without an upper limit, the definition could be construed to include appliances that are not similar to an MVAC in all relevant respects. For example, a chiller located on a marine vessel could be mistakenly considered MVAC-like. EPA believes that an upper limit would prevent any possible confusion. To ensure consistency between what is an "MVAC" and what is "MVAC-like," the refrigerant limit for MVAC-like appliances must be consistent with the largest amount of refrigerant contained in most MVACs. EPA discussed in the NPRM that EPA believes that all MVACs contain less than 20 pounds of refrigerant. Therefore, the adoption of a 20-pound limit for MVAC-like appliances should not exclude any appliance that reasonably should be considered MVAC-like. EPA further stated that placing a charge limit into the definition would provide clarity to those who are unsure about whether a particular appliance qualifies as MVAC-like, specifically where the charge is larger than that of the average automobile air conditioner, yet smaller than that of the average bus air conditioner. Therefore, EPA proposed to add a 20-pound ceiling to the definition of MVAC-like appliance.

EPA requested comment on amending the definition of MVAC-like appliances and whether a ceiling of 20 pounds represents an appropriate cutoff. EPA did not receive any comments or concerns indicating that the 20-pound limit was inappropriate based on the existence of appliances that should meet this definition and contain a larger refrigerant charge. Therefore, through this action, EPA is adding a 20-pound limit to the definition of MVAC-like appliances.

F. Changes to the ARI Standard 740 Test Procedure for Refrigerant Recycling and Recovery Equipment

As proposed, EPA is adopting several changes to the current test procedure for refrigerant recycling equipment found

in 40 CFR part 82, subpart F appendix B, which was based on the Air-Conditioning and Refrigeration Institute's 1993 standard for refrigerant recycling and recovery equipment (*i.e.*, ARI Standard 740-1993) and will now be based upon ARI Standard 740-1995. These changes, all of which have already been adopted by industry into the ARI Standard 740-1995, include: Adoption of a new and more representative method for measuring the equipment's refrigerant recovery rate; measurements of the equipment's recovery rate and final vacuum at high temperatures; a limit on the total quantity of refrigerant that may be released from equipment during non-condensable purging, oil draining, and equipment clearing; a measurement of the quantity of refrigerant left in the condenser of equipment after clearing has occurred; standards for external hose permeability; and a requirement that equipment be tested with recovery cylinders that are representative of those used with the equipment in the field.

In addition, EPA is requiring that equipment that is advertised as "recycling equipment" be capable of recycling refrigerants to the contamination levels (except that for "Other Refrigerants") set forth in the IRG-2 table of Maximum Contaminant Levels of Recycled Refrigerants in Same Owner's Equipment. As discussed in more detail below, EPA is adopting these changes to help ensure that recycling of refrigerant is maximized and that emissions of refrigerant from refrigerant recovery and recycling equipment are minimized.

EPA received many supportive comments on its proposed adoption of the above requirements. Comments recommending changes to the proposed requirements or requesting more information on their implementation are discussed in more detail below.

1. Measurement of Vapor Recovery Rates

As proposed, EPA is requiring a more representative measurement of recovery equipment's vapor recovery rate. As discussed in the proposal, the ARI Standard 740-1993 was adopted by EPA in the May 14, 1993 final rulemaking as appendix A. Appendix A required measurement of the maximum vapor recovery rate, but two pieces of equipment with identical maximum recovery rates can have very different average recovery rates. This is because equipment characteristics that are not important to vapor recovery rates at the beginning of recovery, such as compressor clearance, become increasingly important as recovery

progresses. Although EPA has not established minimum vapor or liquid recovery rates, the Agency believes that the best possible information on these rates should be available to technicians to ensure that they purchase recycling and recovery equipment that best suits their needs. EPA also believes that technicians with adequate recovery equipment are less likely than technicians with slow equipment to interrupt the recovery procedure before it is complete. Thus, EPA is adopting the more recent version of the ARI Standard 740 (*i.e.*, ARI Standard 740-1995), which includes a measure of the average recovery rate.

The new test measures the change in mass and time elapsed as the pressure of the test chamber is lowered from the saturation pressure of the refrigerant at 24°C (75°F) (or from atmospheric pressure, if the refrigerant boils at a temperature above 75°F) to the lower of atmospheric pressure or 10% of the initial pressure. EPA specifically requested comment on adopting ARI Standard 740-1995 as the method of measuring the average recovery rate of recycling and recovery appliances, and on whether there was any reason to retain ARI Standard 740-1993 as the basis for appendix B of 40 CFR part 82, subpart F. EPA received no comments opposing or recommending changes to the more representative method of measuring the vapor recovery rate of equipment.

2. High-Temperature Testing

EPA is adopting the proposed requirement that the vapor recovery rate and final recovery vacuum of recovery and recycling equipment be measured at 40°C (104°F), in addition to 24°C (75°F), for recovery and recycling equipment intended for use with high-pressure refrigerants. As discussed in the NPRM, recovery and recycling equipment used in the field are likely to have to function at temperatures considerably higher than 75°F (61 FR 7866). The performance of recovery and recycling equipment is likely to be affected by such high temperatures. High temperatures raise the saturation pressure of the refrigerant in the recovery tank, thus raising the compression ratio against which the compressor in the recovery device must work to evacuate the refrigerant from an appliance. This can both slow recovery and prevent the equipment from achieving vacuums that it can achieve at 75°F. In some cases, equipment can actually stop running at high temperatures, because pressures rise too high or because the motor overheats or draws too much current in its attempt

to recover the refrigerant, tripping safety switches. Underwriters Laboratories (UL) reported that more than 50 percent of refrigerant recovery and recycling units initially failed to operate continuously during high temperature testing that is required as part of UL's safety testing (Air Docket A-92-01, Category: VI-B7-14; 2/22/96 letter to Deborah Ottinger/USEPA, from Glenn Woo and Steve Leva/UL regarding Equipment Construction features affecting certification testing).⁴

EPA believes that the high-temperature tests included in the revised ARI Standard 740 provide useful information on equipment's ability and quickness to draw vacuums at high temperatures. At the same time, these tests are likely to reveal many of the problems that might occur in equipment operated at high temperatures in the field (as has UL's safety test at 104°F), such as thermal or electrical overloading of motors. The test requires that the mixing chamber, a container with a minimum volume of three cubic feet, be filled with refrigerant vapor (but no liquid) at the refrigerant's saturation pressure at 104°F. As in the 75°F test, this vapor is then recovered until the final recovery vacuum is reached. Also as in the 75°F test, the vapor recovery rate is measured while the pressure in the mixing chamber is reduced to 10% of the initial pressure. Because repeating the test with all of the refrigerants for which the equipment is rated would considerably raise the costs of certification, the high-temperature test is performed with one refrigerant, R-22. If the recycling or recovery equipment is not rated for R-22, then equipment is tested with the refrigerant with the lowest boiling point, and therefore the highest saturation pressure for which it is rated. If the equipment is not rated for refrigerants with boiling points in the range of -50° to 10°C, the high-temperature test is not performed.

EPA received two comments concerning the proposed adoption of the high-temperature testing requirement (as part of ARI Standard 740-1995), one in opposition and the other expressing concern that it would be the first of many requirements to test equipment at a variety of temperatures. The commenter, while stating that EPA had set forth a "convincing explanation why additional testing [at higher temperatures] was necessary," expressed concern that EPA "will have to issue more, and more, and more specifications [regarding testing at

⁴ The equipment was redesigned to operate at elevated temperatures before it was UL listed.

different temperatures] as time passes.” This commenter stated that EPA might now attempt to issue requirements for testing at colder temperatures and could ultimately require testing at “two-degree increments over a range of 200 degrees.” The commenter further stated that before the regulations ever required certification, that the commenter was capable of successfully manufacturing its own recycling/recovery equipment. Finally, the commenter concluded that “EPA is being trapped into specifying ever-greater detail, where no detail is really needed.”

EPA disagrees with this conclusion. First, both the physics of refrigerant recovery and the results of UL’s testing show that useful new information about equipment performance is gained through high-temperature testing. While some manufacturers may have caught and corrected performance problems at high temperatures without testing by third parties, others clearly have not. Thus, this “detail” is indeed “needed.” Second, EPA does not believe that it has been “trapped into specifying ever-greater detail” in its equipment certification program. In general, EPA considers both the costs and the benefits of potential changes to its equipment certification standards. In some cases, the additional information that could be gained justifies the cost of additional testing; in others, it does not. For instance, the Agency believes that the additional information that could be gained through requiring a more representative measure of the vapor recovery rate justifies its cost; however, as discussed below, EPA has concluded that the additional information that could be gained through durability testing does not justify the additional cost. Thus, while certification requirements will clearly need to be amended as the industry changes and acquires more experience with recovery technologies, EPA does not anticipate that these amendments will be overly burdensome or unwieldy.

In this case, the high-temperature testing requirement is part of the only set of amendments to the test procedure for recycling and recovery equipment made so far, and reflects a change to this procedure that has already been made by industry. At one time, EPA had contemplated a requirement for low-temperature testing, but the Agency decided not to propose this because (1) performance problems at low temperatures were not as serious as those at high temperatures, and (2) recovery at low temperatures takes place less frequently than recovery at high temperatures, and hence venting of refrigerants is more likely to occur at

higher temperatures. Of course, if new information arose indicating widespread equipment failure at low temperatures and subsequent venting of refrigerants, EPA might reconsider imposing a requirement for low-temperature testing. However, since equipment performance can be interpolated reasonably well between measurements at temperature means and extremes, it is very unlikely that EPA would require measurements of equipment performance at two-degree intervals.

3. Use of Representative Recovery Cylinders

As proposed, EPA is adopting the ARI Standard 740–1995 into appendix B2. To further ensure that equipment testing is representative of likely performance in the field, appendix B2 specifies that recovery cylinders used in testing (1) be the same size as those sold with the equipment and (2) be held at the saturation pressure of the refrigerant when testing begins. Use of oversize or evacuated cylinders can yield artificially high recovery rates and artificially deep recovery vacuums, because the recovery compressor does not have to work as hard to move refrigerant into oversize or evacuated cylinders as it does to move refrigerant into normal size cylinders at the saturation pressure of the refrigerant. Both of these requirements codify procedures that are being followed voluntarily by both of the EPA-approved equipment testing organizations.

One commenter expressed concern that this requirement would be inappropriately applied to equipment that is not sold with recovery cylinders, such as equipment that is designed to recover large charges into rail cars or tank trucks. According to ARI and UL, the two approved equipment testing organizations, most manufacturers whose equipment they have certified offer recovery cylinders with their equipment. UL actually requires manufacturers to provide recovery cylinders with the equipment. When equipment is not offered with recovery cylinders, ARI tests the equipment with the size cylinder specified in the manufacturer’s instructions. EPA considers the latter approach as reasonable and is modifying appendix B2 (based on ARI Standard 740–1995) to add the phrase “or specified in the instructions” to the relevant requirement in section 7.4.1 to clarify that it is permissible. The modified requirement reads, “Recovery cylinder shall be the same size as normally furnished or specified in the instructions by the equipment manufacturer.”

The same commenter argued that EPA should not object to the use of oversize recovery cylinders in testing, but only to the use of undersize cylinders, because oversized cylinders do not affect the results of certification testing. As described both in the proposal and above, oversize recovery cylinders can distort the results of certification testing. Therefore, EPA is promulgating the requirement that cylinders used in testing be the same size as those sold or specified for use with the equipment.

4. Limiting Emissions from Condenser Clearing, Oil Draining, Purging, and External Hoses

ARI Standard 740–1995 addresses three potential sources of refrigerant emissions that ARI 740–1993 did not address: condenser clearing, oil draining, and emissions from external hoses. As discussed in the NPRM substantial quantities of refrigerant may remain in the condensers of recycling and recovery equipment after refrigerant has been transferred to a recovery tank or back into an appliance. Unless this refrigerant is properly removed, it will either contaminate subsequent batches of refrigerant, a serious concern when switching refrigerants (e.g., from R–12 to R–22), or be released to the atmosphere. There are a number of methods to remove this refrigerant properly; however, some of these methods are more complicated and time-consuming than others. One of the most important factors in the speed and effectiveness of the refrigerant clearing process is the design of the recovery or recycling equipment itself.

To help ensure that the design of recovery equipment minimizes the amount of residual refrigerant that either escapes to the atmosphere or contaminates subsequent batches, ARI Standard 740–1995 includes measurements both of the mass of refrigerant that is released during clearing and of the mass of refrigerant that remains in the equipment after clearing is complete. The mass of refrigerant released during clearing is added to the masses released during the purging of noncondensables and oil draining (see below); this total cannot exceed 3% of the total mass of refrigerant processed through the equipment. The mass of refrigerant that remains in the equipment is not limited, but is reported in the equipment ratings so that prospective buyers can use the information in their purchasing decisions.

To help ensure that the clearing procedure is not excessively complicated or time-consuming, the ARI Standard 740–1995 also requires that

the manufacturer provide methods and instructions that accomplish connections and clearing within 15 minutes. Any special equipment required for clearing, other than a vacuum pump or manifold gauge, must be provided by the manufacturer along with the recovery or recycling equipment, and the clearing procedure cannot rely upon a storage cylinder below the saturated pressure of the refrigerant. In setting up these constraints, ARI recognized that procedures requiring exotic equipment or excessive time are less likely to be followed than procedures that are simple and fast.

Another source of potential emissions is oil draining. Refrigerant oils are designed to mix well with refrigerants so that they flow easily within the refrigeration system. A drawback to this characteristic is that significant quantities of refrigerant can remain entrained in oil that is withdrawn from appliances. Because several system contaminants tend to concentrate in the oil, many recycling and recovery machines include an oil separator that must be periodically emptied. To ensure that oil draining does not result in excessive refrigerant emissions, the ARI Standard 740-1995 procedure measures the mass of refrigerant that is released from oil after its removal from the recovery or recycling equipment. As noted above, the sum of the masses of this refrigerant, the refrigerant emitted during condenser clearing, and the refrigerant emitted during noncondensables purging cannot exceed 3% of the mass of refrigerant processed by the equipment.

One commenter stated that while the 3% limit was appropriate for recycling equipment, it was too loose a standard for recovery only equipment, which does not purge noncondensables and therefore does not lose any refrigerant during this process. The commenter requested a 1% limit instead of 3%. EPA does not conclude that establishment of a 1% limit is warranted at this time; therefore, EPA is today establishing in appendix B2 a 3% limit for both recovery equipment and recycling equipment. In the future, however, EPA may consider lowering this limit for recovery equipment.

The third source of emissions addressed by ARI Standard 740-1995 is external hose assemblies. Although ARI 740-1993 includes a permeability limit for internal hoses of 5.8 g/cm²/yr, it does not include such a limit for external hoses. ARI Standard 740-1995 establishes a limit of 3.9 g/cm²/yr at 48.8°C (120°F) for all hose assemblies, to be tested under the conditions of UL

1963. EPA received no comments opposing this limit and is therefore incorporating it into appendix B2.

5. Durability Testing

As discussed in the NPRM, EPA does not believe that it would be useful to require long-term durability testing of recovery and recycling equipment. Factors militating against such a requirement include: (1) EPA does not believe that equipment durability has any effect on refrigerant emissions; (2) durability issues likely will be adequately addressed by free market forces; (3) equipment durability is not likely to be a concern due to technological advances in recovery technology; (4) notwithstanding factor (3), recovery equipment that is likely to experience durability problems is likely to be identified by ARI 740-1995; and (5) requiring durability testing would not be cost-effective, when compared to the relative benefits versus the substantial increased testing costs that would result. EPA received two comments opposing durability testing (61 FR 7869). One commenter "vigorously oppose[d]" durability testing. No commenters supported it. For the reasons discussed in the proposal, EPA is not requiring durability testing of recovery and recycling equipment.

6. Clarification of Labeling Requirements for Recovery/Recycling Equipment

EPA is clarifying that manufacturers of refrigerant recovery and recycling equipment must label their equipment in accordance with § 82.158(h) in addition to the labeling requirements established under section 11 of both Appendices B1 and B2 (based upon section 11 of the ARI Standard 740-1993 and 1995, respectively).

The EPA labeling requirement was promulgated as a part of the May 14, 1993, final rule, (58 FR 28682). The labeling requirement states that manufacturers and importers of recovery and recycling equipment certified under 40 CFR 82.158(b) and (d) must place a label on each piece of equipment stating the following: *This Equipment Has Been Certified by [Approved Equipment Testing Organization] to Meet EPA's Minimum Requirements For Recycling or Recovery Equipment Intended For Use With [Appropriate Category of Appliance].*⁵ The label shall also show the date of manufacture and the serial number (if

⁵ Appropriate category of appliance is considered as low-, high-, and/or very high-pressure appliances as defined at § 82.152.

applicable) of the equipment. The label shall be affixed in a readily visible or accessible location, be made of a material expected to last the lifetime of the equipment, present required information in a manner so that it is likely to remain legible for the lifetime of the equipment, and be affixed in such a manner that it cannot be removed from the equipment without damage to the label.

Since 1993, EPA has adopted into appendix B, and now Appendices B1 and B2, the requirements of ARI Standard 740 (58 FR 28686). Section 11 of the standard, "Marking and Nameplate Data," specifies that the nameplate shall display the manufacturer's name, model designation, type of equipment, designated refrigerants, capacities and electrical characteristics where applicable. Section 11.2 -Data for Designated Refrigerants, states that for each refrigerant designated, the manufacturer shall include liquid recovery rate, vapor recovery rate, high temperature vapor recovery rate, final recovery vacuum, recycle flow rate, residual trapped refrigerant, and the quantity of refrigerant recycled as applicable.

EPA is clarifying that since the Agency has adopted the ARI Standard 740-1995 into appendix B2 and the ARI Standard 740-1993 into appendix B1, that the nameplate data of section 11 of Appendices B1 and B2 are also required. EPA reiterates that this is not a new requirement, and places emphasis on the labeling requirement by editing section 11 of both Appendices B1 and B2 to reference the labeling requirement at § 82.158(h). Adherence to only the nameplate data requirements of the ARI Standard 740 does not satisfy the labeling requirement of § 82.158(h) or section 11 of Appendices B1 and B2. Furthermore, the Agency is clarifying that the nameplate data and the labeling requirements established at § 82.158(h) are both the responsibilities of the importer or manufacturer of the equipment and not that of the equipment testing organization. Failure of the manufacturer to abide by these requirements is considered a violation of the prohibitions established at 40 CFR 82.154(c).

7. Effective Date of New Standards and Grandfathering of Equipment

EPA did not propose an effective date for the new equipment certification standard. However, several commenters pointed out that equipment testing organizations will require a significant amount of time to finish testing equipment to the new standard.

Commenters requested that EPA clarify whether equipment manufactured and certified under the old standards before the effective date of the new standard will be grandfathered.

ARI and UL indicated in their comments that it will take approximately one year for the equipment certification organizations to complete the recertification process. However, those comments were written and received in 1996. Since that time, the two equipment testing organizations (*i.e.*, UL and ARI) have independently begun to test to the ARI Standard 740–1995, while continuing to test to the 1993 version of the standard in order to satisfy the certification requirement of § 82.158. Therefore, EPA will not provide a one year period for the transition as proposed, but will ease the financial burden on equipment manufacturers by making the requirement to certify to the 1995 version of the standard effective 60 days after this final rule is published in the **Federal Register**.

However, EPA is “grandfathering” existing equipment by maintaining the reference to the 1993 version of the standard as it applies to equipment previously certified to the ARI Standard 740–1993. This is being accomplished by amending § 82.158(b)(1) to reference new appendix B1 (based on ARI Standard 740–1993), such that equipment manufactured on or after November 15, 1993 and before September 22, 2003, must be certified to appendix B1 based on the 1993 edition of the standard. In addition, EPA is maintaining the certification of equipment manufactured before November 15, 1993, that meets the applicable performance standards as set forth at § 82.158(c). Therefore, “grandfathered equipment” will include both (1) equipment manufactured on or after November 15, 1993 but before September 22, 2003, that was certified to ARI Standard 740–1993 by an EPA-approved equipment testing organization and (2) equipment manufactured before November 15, 1993 that meets the applicable performance standards as set forth at § 82.158(c). Equipment manufactured on or after September 22, 2003, must be certified to the new standard set forth at § 82.158(b)(2) and appendix B2 (based upon ARI Standard 740–1995).

While EPA is not requiring recertification of equipment previously certified under the conditions of the ARI Standard 740–1993, EPA is requiring that the three-year retest of certified equipment and inspections of

equipment at manufacturing facilities conducted in accordance with § 82.158(j) subparagraphs (1) and (2) be done to the standard by which the equipment was originally certified in accordance with § 82.158(a).

8. Requirements for Equipment Advertised as “Recycling Equipment”

As proposed, EPA is requiring that equipment that is marketed as “recycling” equipment be able to recycle the sample of dirty refrigerant to the maximum contaminant levels (except for “Other Refrigerants”) listed in the table in IRG–2 when tested under the conditions of ARI 740. As noted in the proposal, EPA believes that technicians and contractors should have some assurance that equipment that is marketed as “recycling equipment” is capable of recycling used refrigerant to some minimum level. This assurance would be especially useful to contractors who recycle refrigerant for reuse into their customers’ equipment. IRG–2 states that recycling equipment that is certified to ARI Standard 740 and capable of consistently recycling refrigerant to the contaminant levels (as detailed in the maximum contaminant level table) should be used. The refrigerant sample used in ARI Standard 740 is representative of a contaminated system, so equipment that can recycle the refrigerant in this test to the contaminant levels of IRG–2 is considered to have acceptable recycling capabilities.

In the proposal, EPA reprinted the IRG–2 table entitled “Maximum Contaminant Levels of Recycled Refrigerants in Same Owner’s Equipment.” EPA received two comments on this table and its use as a standard for equipment advertised as “recycling” equipment. One of the comments noted that it was not appropriate to list maximum contamination by other refrigerants in a standard for recycling equipment, because recycling equipment is not capable of removing contamination by other refrigerants.

EPA agrees and has edited the table accordingly by removing the last row from the chart. The chart in IRG–2 included maximum levels for other refrigerants because its original purpose was to establish a general standard for the level of impurities, including other refrigerants, for refrigerant that is intended to be reused in the same owner’s equipment. Thus, it included maximum levels for all the common contaminants of refrigerant, including other refrigerants. EPA has also edited

the column labeled Low-pressure systems to reference the refrigerants used by low-pressure appliances for which the recycling equipment is intended.

One commenter asked why the limit for moisture in Table 1 was set at 20 ppm, while the limit for moisture in the ARI 700 standard is set at 10 ppm. The ARI 700 standard establishes a moisture limit of 10 ppm for high-pressure refrigerants and a limit of 20 ppm for low-pressure refrigerants. Table 1 sets a moisture limit of 10 ppm for R–12, and a limit of 20 ppm for other refrigerants.

The moisture limits are set in consideration of both the technical limits of recycling equipment and the tolerance of different types of refrigerants for moisture. The moisture limits in the IRG–2 standard (from which Table 1 is drawn) for most high-pressure refrigerants are slightly higher than those in the ARI Standard 700 in recognition of the fact that even high-quality recycling equipment may not be able to lower moisture levels to those in the Standard. A lower limit was established for R–12 in the IRG–2 Standard from which Table 1 is drawn because water is significantly less soluble in R–12 at its typical operating temperatures than in other refrigerants at their typical operating temperatures. For instance, at 20 degrees F (well within the range of typical evaporator temperatures for both R–12 and R–22 systems), the solubility of water in R–12 is just 16.6 ppm, while the solubility of water in R–22 is 472 ppm. This means that free (undissolved) water forms at much lower moisture levels in systems using R–12 than in systems using other types of refrigerants, and free water can damage or interfere with the functioning of air-conditioning and refrigeration systems by corroding system components or by restricting or even stopping the flow of refrigerant through the system. Thus, it is critical to keep moisture levels well below those where free water can form.

As proposed, EPA is making this change for certification of recycling only equipment effective 90 days after publication of this final rule, in order to give manufacturers the opportunity to change their advertising and marketing materials. Recycling only equipment that is manufactured on or after October 22, 2003, must be certified to appendix B2 (based on ARI Standard 740–1995) and must be able to recycle the dirty refrigerant sample under the conditions of appendix B2 to the levels stated in the following table.

MAXIMUM LEVELS OF CONTAMINANTS PERMISSIBLE IN REFRIGERANT PROCESSED THROUGH EQUIPMENT ADVERTISED AS "RECYCLING" EQUIPMENT

| Contaminants | Low-pressure (R-11, R-123, R-113) systems | R-12 systems | All other systems |
|----------------------------------|---|----------------|-------------------|
| Acid Content (by wt.) | 1.0 PPM | 1.0 PPM | 1.0 PPM. |
| Moisture (by wt.) | 20 PPM | 10 PPM | 20 PPM. |
| Noncondensable Gas (by vol.) | N/A | 2.0% | 2.0%. |
| High Boiling Residues (by vol.) | 1.0% | 0.02% | 0.02%. |
| Chlorides by Silver Nitrate Test | No turbidity | No turbidity | No turbidity. |
| Particulates | Visually clean | Visually clean | Visually clean. |

9. Procedure for Updating Approval of Certification Organizations

EPA will continue to recognize the approval of the two existing testing organizations (*i.e.*, UL and ARI) to certify recovery/recycling equipment to the old standards at § 82.158(b)(1) and appendix B1 (based on ARI Standard 740-1993) until September 22, 2003.

The two equipment testing organizations that have been approved by EPA to certify equipment under the old standard at § 82.158(b)(1) are required to submit their intentions to certify equipment under the new standard at § 82.158(b)(2) in writing no later than 60 days after this final rule is published in the **Federal Register**.

However, these organizations need not resubmit the information on their test facilities, equipment testing expertise, long-term performance verification programs, knowledge of the standards, and objectivity that they submitted to become approved to certify under § 82.158(b)(1). Instead, they only need state their intention to test equipment under the new conditions of § 82.158 and submit information in those areas where their original application to certify equipment under § 82.158(b)(1) and appendix B1 (based on ARI Standard 740-1993) differs from the requirements at § 82.158(b)(2) and appendix B2 (based on ARI Standard 740-1995).

Upon receipt of the written notification, EPA will continue to recognize the approval of the two existing testing organizations to certify to the new standard at § 82.158(b)(2) and appendix B2 (based on ARI Standard 740-1995) without interruption.

EPA has also amended § 82.160 "Approved equipment testing organizations," by deleting the paragraph that essentially grandfathered recovery/recycling equipment tested by UL and ARI prior to their approval as equipment testing organizations. The paragraph has become obsolete since UL and ARI are the only two programs that were approved by EPA to certify

equipment under the conditions of § 82.158.

10. Other Issues Raised by Commenters

One commenter argued that EPA should require that recovery cylinders sold with recycling equipment be supplied with fill-limiting devices to prevent overfilling of cylinders and the injury that can result. EPA decided not to require fill-limiting devices in the final rule published in May 1993, citing several technical problems then involved with their use. However, EPA recognizes that some of these problems may have been resolved; therefore, EPA may consider requesting comment on this issue in a future notice.

The same commenter suggested that the rule include test procedures for evaluating recovery and recycling equipment for use with the new blends entering the marketplace. EPA agrees that this is an important consideration in equipment certification, and the Agency therefore plans to address this issue in the section 608 rulemaking covering recycling of substitutes for CFC and HCFCs.

EPA received a comment stating that paragraph 12 of appendix B inappropriately indicates that the refrigerant recovery/recycling equipment standard is voluntary. Paragraph 12 inadvertently includes the paragraph on voluntary conformance from the ARI Standard 740; therefore, EPA has deleted this paragraph in Appendices B1 and B2, and wishes to clarify that the ARI standards referenced in 40 CFR part 82, subpart F are included into regulation by their adoption into the appendices of subpart F. The ARI standards are not Federal regulations, but the Agency has used them as the basis for Appendices A, B1, and B2. Therefore, the regulated community is required to adhere to the regulations contained in 40 CFR part 82, subpart F (including all applicable appendices), not the ARI standards themselves. This distinction is extremely pertinent for issues such as the previously discussed labeling

requirements for certified recovery and recycling equipment, where voluntary conformance to the marking and nameplate data of the ARI Standard 740-1995 does not satisfy the required labeling requirements of 40 CFR 82.158(h).

G. Major and Minor Maintenance, Service, or Repair

Effective July 13, 1993, technicians were required to evacuate air-conditioning and refrigeration equipment to established vacuum levels as stated in Table 1 of § 82.156. EPA also granted an exception to these evacuation requirements for non-major maintenance, service, or repair that did not include the removal of any major components and was not followed by the evacuation of the appliance to the environment, § 82.156(a)(1)(i). EPA believed that such repairs would result in very little release of refrigerant to the environment. EPA did not explicitly define "non-major" maintenance, service, or repair; instead EPA defined "major" maintenance, service, or repair as involving removal of the compressor, condenser, evaporator, or auxiliary heat exchanger coil. EPA specified removal of major equipment components, because at that time, EPA intended non-major maintenance, service, or repairs to include procedures that involve uncovering only a small opening in the appliance and that take place in a matter of minutes. After promulgation of the final rule, EPA received several requests for the Agency to expand and clarify the definition of "major maintenance, service, or repair" and explicitly define "non-major maintenance, service, or repair." The requesters believed that the definition of major maintenance, service, or repair was too narrow, excluding some types of repairs that result in considerable refrigerant release.

EPA agreed with the requesters that major maintenance, service, or repair had been defined too narrowly; therefore, EPA proposed in the NPRM to add definitions for "major repairs of

low-pressure chillers” and “non-major repair of low pressure chillers.” EPA requested comments on the proposed definitions; on whether the definitions were specific enough; whether other types of repairs should be considered; and whether the definitions were consistent with industry practices and/or terminology.

EPA received comments that questioned whether the proposed definitions of “major repairs of low-pressure chillers” and “non-major repair of low pressure chillers” were intended to apply to high-pressure and very high-pressure appliances. The commenters stated that emphasis should be placed on opening of the appliance during maintenance, service, or repair and not just repair of chillers. EPA also received several comments stating that, as proposed, the definitions would only affect repairs while ignoring maintenance and service of appliances. The commenters noted concern over the continued use of the word “repair” in the NPRM as it pertains to chillers instead of low-pressure appliances.

In the May 14, 1993, rulemaking, EPA made no distinctions between low-pressure, high-pressure, or very high-pressure appliances in defining major maintenance, service, or repair. The intent of the proposed definition of “major” and “non-major repairs of low-pressure chillers” was to provide clarity to the definition of major maintenance, service, or repair (at § 82.152) as it pertains to low-pressure chillers. EPA believes that while the intent of the NPRM was met by proposing two definitions, that this approach causes potential confusion by defining “major” and “non-major repairs of low-pressure chillers,” while only referencing major in the evacuation exemption of § 82.156(a)(1)(i); therefore, EPA is revising the definition of major maintenance, service, and repair without adding new definitions for non-major maintenance, service, and repair of different appliance pressure groups nor is the Agency singling out low-pressure chillers in defining major maintenance, service, or repair.

While EPA proposed changes that specifically addressed low-pressure chillers, the Agency received several comments requesting clarification of the definition of major and non-major repairs of high-pressure and very high-pressure appliances as they relate to the evacuation exemption as described in § 82.156(a)(1) and (a)(2). Several commenters noted that non-major maintenance, service, or repair of high-pressure and very high-pressure appliances currently can be performed at atmospheric pressure without having

to draw a deep vacuum and urged EPA to continue to allow this practice. EPA also received requests for clarification on whether or not the proposed changes affect the exceptions to the evacuation requirements for minor repairs that are not followed by evacuation of the appliance to the atmosphere. The commenters stated that the Agency’s proposal to add a definition for major repair of low-pressure chillers invalidates the exceptions for high- and very high-pressure appliances and has also prohibited oil changes on high- or very high-pressure appliances without first evacuating the appliance to the levels established in Table 1 of § 82.156.

The revisions to the proposed definition of “major” and the deletion of the proposed definition of “non-major repair of low-pressure chillers” reflect the initial intent of the NPRM to provide clarity as to what the Agency considers “major” and do not affect the evacuation exceptions for persons opening appliances (except for small appliances, MVACs, and MVAC-like appliances) established under the subparagraphs of § 82.156(a)(1) and (a)(2). The required practices established at § 82.156 require that refrigerant be evacuated (to the levels of Table 1) from the appliance prior to opening the appliance, by properly using EPA-certified recovery and/or recycling equipment, except for instances where evacuation of the appliance to the atmosphere is not to be performed after completion of the maintenance, service, or repair and such action is not considered “major” (§ 82.156(a)(1)(i)). The required vacuum levels vary depending on the type of appliance and the date of manufacture of the certified recovery/recycling equipment, as stated in § 82.156 Table 1. These evacuation requirements still hold true for all types of appliances, including HCFC-22, other high-pressure, and very high-pressure appliances.

Five commenters stated that the proposal to limit the opening requirement to a two-inch diameter for non-major repairs of low-pressure chillers is too restrictive. Several other commenters claimed that some openings in fact may be oval, rectangular, some other shape, or three or more inches wide. Additionally, there can be a difference between the nominal diameter and the actual diameter depending on what “schedule” of pipe is used thus determining the thickness of pipe walls.

EPA agrees with these commenters that a two-inch diameter is too restrictive. In response, the Agency has determined that opening requirements

should be expressed in square inches of “flow area” instead of an external circular diameter. Due to the fact that not all openings are circular, pipes are often fitted with gaskets with a variety of opening shapes. Therefore, the opening requirement for non-major maintenance, service, or repair of low-pressure appliances is not to exceed a “flow area” of four (4) square inches. The “flow area” should be interpreted to mean the most restricted opening through which refrigerant passes, therefore eliminating any confusion as to whether the definition applies to the nominal or actual pipe diameter or measurements. EPA is using the 4 in 2 as a criterion for designating a repair as “major maintenance, service, or repair” while not explicitly defining non-major or restricting the definition to low-pressure chillers as proposed.

One commenter stated that the language requiring technicians to cap or isolate openings during “non-major” repairs (of low-pressure chillers) should be revised. The commenter stated that a gas-tight cap may pose a safety risk in the case of pressure build-ups and that technicians should not be required to cap when it may be better to use a cover or plug. Additionally, this commenter believed that technicians should not be restricted to “isolation valves” when it may be better to use a blank for cases where openings cannot be covered at all times or instances when the appliance is not in use.

The Agency agrees that the proposed regulations were too prescriptive. The intent of the proposed provisions was to prevent unintentional refrigerant loss during maintenance, service, and repair procedures. However, EPA agrees that technicians must have discretion to select the safest alternative during any service procedure when no isolation valves are present. Since the regulations already allow for the isolation of appliance parts that are to be serviced, EPA has rescinded the proposed definition of non-major repair of low pressure chillers. This allows greater flexibility to technicians who service, maintain, and repair appliances, while maintaining the intent of the NPRM to reduce emissions during such service, maintenance, and repair.

EPA received comments concerning the proposed 15 minute time frame for defining non-major repair. One commenter stated that 15 minutes is too long, since a significant refrigerant loss can occur even when a technician is attempting to maintain atmospheric pressure. The commenter noted that a shorter time period would result in only “*de minimis*” releases of refrigerant. Another commenter requested

clarification of whether repairs are still considered non-major if they take more than 15 minutes and the opening is less than two inches and can be capped or isolated.

EPA is setting the 15 minute maximum in its revised definition of "major maintenance, service, or repair" as a means of differentiating between major and non-major activities, while not explicitly defining "non-major" or limiting the definition to low-pressure chillers. The designation of the maintenance, service, or repair as "major" establishes whether or not an exemption to the evacuation required practice is allowed under § 82.156(a). EPA is not establishing or suggesting a time limit for any particular maintenance, service, or repair activity on an appliance. However, maintenance, service, or repair involving the uncovering of a small opening of more than four square inches of flow area for more than 15 minutes will be considered "major," and the exemption to the evacuation required practice will not be allowed. This designation should not be interpreted as an EPA mandate on how much time is required to perform any specific maintenance, service, or repair. In addition, EPA is reiterating that the venting prohibition of the Act exempts "de minimis" releases associated with good faith attempts to recapture and recycle or safely dispose of class I and class II refrigerants. The circumstances under which releases may be considered *de minimis* are set forth at 40 CFR 82.154(a).

Two commenters stated that technicians should be allowed to hold low-pressure appliances at or below 0 psig, not exactly at 0 psig as the proposal requires. Two other commenters stated that EPA should not require non-major repairs to be performed at 0 psig for the entire appliance if isolation of the portion of the appliance requiring service, maintenance, or repair is possible.

The intent of the proposed rule was to minimize the risk of emission due to diffusion of refrigerant into the atmosphere and air into the system. EPA did not propose to lower the evacuation level for low-pressure appliances when evacuation of the appliance to the atmosphere is not to be performed as required by § 82.156(a)(2)(i)(B). Since the regulatory structure already allows for the evacuation of high- or very high-pressure appliances to no higher than 0 psig and at 0 psig before a low-pressure appliance is opened (§ 82.156(a)(2)(i)(A) and (B) respectively), EPA is rescinding the proposed definition of non-major repair for low-pressure chillers and has

revised the proposed definition of major repairs of low-pressure chillers without the condition that such repairs be performed at 0 psig for the entire appliance or the isolated portion of the appliance.

One commenter urged EPA to clarify that the chart of examples of major and non-major repairs contained in the preamble to the February 29, 1996, NPRM is not part of the rule and may not necessarily be correct.

EPA is clarifying that this chart was submitted by a commenter and was included in the proposal only to present a hypothetical classification of certain service procedures and repairs. The chart was included in the NPRM to provide a non-comprehensive list of examples of common repair functions that technicians routinely encounter. It was not intended to represent a definitive compilation and should not be relied upon for categorizing repairs as major or non-major.

One commenter claimed that EPA has no justification to impose stringent new restrictions on non-major repairs in the absence of a cost/benefit analysis and that the Agency's action seems to go against Executive Order 12866. Under Executive Order 12866 (58 FR 51735, October 4, 1993), the Agency must determine whether this regulatory action is "significant" and therefore subject to review by the Office of Management and Budget (OMB). Executive Order 12866 defines "significant" regulatory action as one that is likely to lead to 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 was determined by OMB and EPA that the proposal to amend the final rule was not a "significant regulatory action" under the terms of Executive Order 12866. EPA submitted this final rule to OMB. OMB determined that this rule is acceptable and did not recommend any changes.

In response to commenters' issues discussed above, EPA is rescinding the proposed definitions of "major" and

"non-major repair of low-pressure chillers," while revising the definition of "major maintenance, service, or repair" based on the comments received in response to the NPRM. Major maintenance, service, or repair means any maintenance, service, or repair that involves the removal of any or all of the following appliance components: compressor, condenser, evaporator, or auxiliary heat exchange coil or any maintenance, service; or repair that involves uncovering an opening of more than four (4) square inches of "flow area" for more than 15 minutes. Non-major maintenance, service, or repair is considered, but not defined at § 82.152, as any such action that does not fall within the definition of major maintenance, service, or repair.

H. Definition of Small Appliances

As discussed in the NPRM, EPA proposed a definition for small appliances prior to the May 14, 1993, rulemaking that included air-conditioning or refrigeration equipment containing less than one pound of refrigerant charge during normal operation. EPA received a number of comments on that proposal stating that the definition was too restrictive. In response, in the May 14, 1993, rule EPA expanded the definition to a more extensive list of products that were fully manufactured, charged, and hermetically sealed in a factory with five pounds or less of refrigerant. After the promulgation of the final rule, EPA received requests that the Agency expand the definition of small appliance to include units that met the criteria for small appliance but were not specifically listed in the definition. In response to these requests, EPA proposed in the NPRM to add appliances such as refrigerators and freezers that are built for medical or industrial research, as well as those used for commercial purposes, and are hermetically sealed at the factory and contain less than five (5) pounds of charge, to the definition of small appliance. In addition, EPA proposed to make the revised list of small appliances illustrative rather than restrictive in order to include in the definition appliances that meet the criteria but are not specifically listed.

EPA received comments that the proposed definition of "small appliance" would make the evacuation requirements more restrictive for some medical small appliances that consist of cascade refrigeration systems utilizing very high-pressure refrigerants. The commenters believed that the more stringent requirements would lead to increased operational costs.

EPA did not propose to change the evacuation requirements for small appliances. As proposed, EPA is amending the definition of "small appliance" at § 82.152, but this change merely clarifies that the list of small appliances used in the definition is illustrative rather than restrictive. Furthermore, the evacuation requirements for small appliances as established at § 82.156(a)(4) have not changed. EPA requires persons opening small appliances for maintenance, service, or repair to: (1) Recover 80% of the refrigerant in the small appliance when using recycling and recovery equipment manufactured before November 15, 1993; or (2) recover 90% of the refrigerant in the appliance when the compressor in the appliance is operating, or 80% of the refrigerant in the appliance when the compressor in the appliance is not operating, when using recycling or recovery equipment manufactured on or after November 15, 1993; or (3) evacuate the small appliance to four inches of mercury vacuum.

As an additional point of clarification, appliances that use any class I or class II refrigerant and meet the definition of "small appliance" must follow the evacuation requirements described above. For example, if an appliance meets the definition of small appliance and uses a refrigerant typically associated with a very high-pressure appliance, such as R-13, the technician opening that small appliance would have to adhere to the evacuation requirements for small appliances established at § 82.156(a)(4) not the evacuation requirements established for very high-pressure appliances (*i.e.*, 0" Hg vacuum).

One commenter requested that the Agency further expand the proposed definition of small appliances and include a list of all known appliances that meet the current definition. This commenter believes that the inclusion of a list of these items will remove any confusion regarding which appliances meet the definition but are not included in the proposed revised definition.

EPA believes that an illustrative list provides the most inclusive option for the definition of small appliances and that a restrictive list may further omit several appliances that meet both the spirit and the criteria of the definition. EPA does not want to make the definition excessively long or overly difficult to read. Therefore, EPA has decided not to include an exhaustive list of appliances that meet the definition for small appliances.

Additionally, the commenter stated that a list of appliances would enable

technician certification programs, employers, technicians, sales and service companies and other business owners to better determine the type of technician certification that is necessary to properly service these appliances. Other commenters also expressed concern that the proposed definition of small appliance may require technicians to obtain both Type I and Type II certification in order to maintain small appliances.

EPA has not changed the technician certification requirements for persons servicing, maintaining, or repairing small appliances. Under § 82.161(a)(1), technicians who maintain, service, or repair "small appliances" as defined in § 82.152 must have a Type I certification. Technicians do not need Type II certification in order to maintain, service, or repair small appliances. In fact, § 82.161(a)(2) specifically states that Type II certification is not required to service, maintain, or repair small appliances.

One commenter noted an irregularity in § 82.161. The Agency is making an editorial correction to § 82.161(a)(2) so that it will refer to § 82.152 rather than § 82.152(x). Section 82.152 is the Definitions section and does not contain paragraphs designated by letters.

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

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.

EPA submitted this final rule to OMB. OMB determined that this rule is

acceptable and did not recommend any changes.

B. Paperwork Reduction Act

The information collection requirements in this rule were submitted for approval to the Office of Management and Budget (OMB) under the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq.* An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 1626.07, and OMB Control number: 2060-0256) and a copy may be obtained from Sandy Farmer by mail at OPPE Regulatory Information Division; U.S. Environmental Protection Agency (2137); 401 M St., SW.; Washington, DC 20460; by email at farmer.sandy@epa.gov; or by calling (202) 260-2740. A copy may also be downloaded off the Internet at www.epa.gov/icr.

OMB has approved the information collection requirements contained in this rule under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.* and has assigned OMB control number 2060-0256.

EPA is concerned with the maintenance of records for approved certifying programs for technicians that no longer administer the section 608 technician certification test. These programs administer and grade tests, maintain records, issue certification credentials, and submit reports to EPA twice a year. EPA expects that programs withdrawing will increase over time and there is a concern that if a technician's certification credentials are lost and the program no longer exists, it may not be possible to receive duplicate credentials.

This rule is an amendment to the recycling standards under section 608 of the Clean Air Act. It amends the recordkeeping provisions by requiring programs that no longer offer section 608 technician certification programs to notify the agency. EPA does not expect cost associated with the withdrawal procedures to be a significant burden, since programs were previously required to maintain records for a minimum of three years, especially since this provision will only involve a notification of withdrawal and transfer of these records. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and

disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. EPA does not expect this rule to be a burden on time or financial resources.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

C. Regulatory Flexibility Act

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. For purposes of assessing the impact of today's rule on small entities, small entities are defined as: (1) A small business that has fewer than 500 employees for most manufacturing and mining industries or 100 employees for all wholesale trade industries; assets of less than \$5 million for most retail and service industries, \$27.5 million for most general and heavy construction industries, \$11.5

million for all special trade contractors, or \$0.75 million for most agricultural industries; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; or (3) a small organization that is any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

This rule affects those entities that recover, recycle, reclaim, and sell CFC and HCFC refrigerants. This rule also affects entities that maintain, service, repair, or dispose of appliances containing CFC or HCFC refrigerants. Entities affected by this action are refrigeration and air-conditioning contractors, refrigerated transport service dealers, scrap metal recyclers, and automobile dismantlers and recyclers. Additional entities affected include EPA-authorized Section 608 Technician Certification Programs and equipment testing organizations, refrigerant wholesalers and purchasers, refrigerant reclaimers, and other establishments that maintain, service, repair, or dispose of appliances containing ozone-depleting refrigerants.

After considering the economic impacts of today's final rule on small entities, EPA certifies that this action will not have a significant economic impact on a substantial number of small entities. EPA has determined that today's rulemaking could potentially

affect approximately 71,150 small entities. These small entities may experience compliance costs ranging from 0.001 percent to 0.13 percent based on their estimated annual sales and revenues.

EPA performed a detailed screening analysis in 1992 of the impact of the section 608 refrigerant recycling regulations on small entities. The methodology of this analysis is discussed at length in the May 14, 1993, regulation (58 FR 28710), and its associated Information Collection Request (ICR) No. 1626.07/OMB No. 2060-0256.

In support of today's rule, EPA has prepared a Small Business Screening Analysis. This analysis assesses the economic impacts on small entities that are anticipated to result from this amendment to the section 608 refrigerant regulations. The screening analysis is not meant to estimate the total burden for compliance with the section 608 refrigerant regulations, but rather any additional burden that might result from today's action amending the section 608 regulations. The table below summarizes the number of small entities potentially affected by today's rule, according to North American Industry Classification System (NAICS) code, and shows the estimated economic impact due to the rule on an average firm within each NAICS code.

| NAICS sector | Industry description | Number of small entities | Number of potentially affected small entities | Estimated average annual sales and revenues (based on average value of shipments per affected small entity) | Average economic impact (percent) |
|--------------|---|--------------------------|---|---|-----------------------------------|
| 81131 | Commercial Industrial | 16,890 | 16,890 | \$681,264 | 0.10 |
| 811412 | Appliance Repair and Maintenance | 5,075 | 5,075 | 488,399 | 0.13 |
| 42193 | Recyclable Material Wholesalers (Metal scrap and waste) | 2,338 | 503 | 4,149,229 | 0.02 |
| 541380 | Environmental Test Laboratories/Services | NA | <100 | NA | NA |
| 443111 | Household Appliance Stores | 10,484 | 8,842 | 713,426 | 0.09 |
| 23511 | Plumbing, Heating, Air Conditioning Contractors | 84,876 | 24,767 | 1,041,843 | 0.06 |
| 42111 | Automobile and Other Motor Vehicle Wholesalers | 737 | 362 | 109,314,837 | 0.001 |
| 42114 | Motor Vehicle Suppliers and New Parts Wholesalers | 2,393 | 2,148 | 763,965 | 0.09 |
| 44131 | Automotive Parts and Accessories Stores | 14,320 | 12,560 | 896,028 | 0.07 |

This table illustrates that while there is additional impact on the regulated community, there is no significant economic impact on a substantial number of small entities. EPA has estimated the number of small entities according to their NAICS, and projected the number of those entities that might be affected by today's action. The additional burden of today's action was then estimated for an average firm within each industrial sector, from

which the economic impact to the average firm in the given sector could be determined as a ratio of the additional burden and the estimated average annual sales and revenues.

Although this final rule will not have a significant economic impact on a substantial number of small entities, EPA has attempted to reduce the impact of this rule on small entities. This rule grants greater flexibility to small businesses working with refrigerants.

For instance, this rule permits persons servicing small appliances and owners of refrigeration and air-conditioning equipment to transfer refrigerant on a wider basis than previously allowed. Today's final rule allows the transfer of refrigerant to different equipment as long as the equipment is owned by the same parent company. Prior to today's action, such refrigerant transfer was limited to equipment owned by one entity unless the refrigerant was first

reclaimed by an EPA-certified reclaimer. In essence today's final rule allows transfer of used refrigerant anywhere in the country, where the two pieces of equipment, have the same parent company (*i.e.*, they are subsidiaries of the parent company) without the additional cost of refrigerant reclamation.

This rule also eases the economic impact on refrigerant recovery equipment manufacturers by reducing the number of performance standards from two to one. Prior to this rulemaking refrigerant recovery/recycling equipment manufacturers were mandated to certify their equipment to the 1993 version of the ARI Standard 740, but many also certified to the 1995 version of the standard to maintain the marketability of their products. This rulemaking will reduce the extra burden on this segment of the regulated community by eliminating the requirement to comply with the outmoded 1993 ARI Standard 740, and mandating the use of the 1995 version of the standard for newly manufactured refrigerant recovery/recycling equipment.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and tribal governments, in the aggregate, or to the private sector of \$100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small

government Agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. This rule amends the section 608 refrigerant recycling standards to ensure that certain service practices are conducted, that reduce emissions, establish equipment and reclamation certification requirements. These standards are amendments to the recycling standards under section 608 of the Clean Air Act. Many of these standards involve reporting requirements and are not expected to be a high cost issue. In some situations, this rule provides greater flexibility and cost savings, such as the transfer of refrigerants between a parent company and its subsidiaries, the new definition of small appliances, and the establishment of a non-major maintenance, service, or repair of appliances. Thus, today's rule is not subject to the requirements of sections 202 and 205 of the UMRA.

For the reasons outlined above, EPA has also determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments. Thus, today's rule is not subject to the requirements of section 203 of the UMRA.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled "Federalism" (64 FR 43255; August 10, 1999), requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government."

This final rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and

responsibilities among the various levels of government, as specified in Executive Order 13132. The regulations promulgated under today's action are done so under title VI of the Act which does not grant delegation rights to the States. Thus, Executive Order 13132 does not apply to this rule.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled "Consultation and Coordination with Indian Tribal Governments" (59 FR 22951, November 6, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications."

This final rule does not have tribal implications, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule.

The requirements in this final rule are directed to economic entities that either recover, recycle, reclaim, sell, or distribute in interstate commerce refrigerants that contain CFCs and/or HCFCs, and those that service, maintain, repair, or dispose of appliances containing CFC or HCFC-refrigerants.

G. Executive Order 13045: "Protection of Children From Environmental Health Risks and Safety Risks"

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885; April 23, 1997) applies to any rule that: (1) Is determined to be "economically significant" as defined under EO 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

EPA interprets Executive Order 13045 as applying only to those "economically significant" regulatory actions that are based on health or safety risks, such that the analysis required under Section 5-501 of the Order has the potential to influence the regulation. This final rule is not subject to Executive Order 13045, because it is not based on health or safety risks. The purpose of this rule is to protect human health and the environment from increased amounts of UV radiation by amending the recycling standards for CFC and HCFC

refrigerants. While the proposed version of today's rule was not determined to be "economically significant," EPA has submitted today's final rule to OMB for review. OMB classified this final rule as "consistent without change."

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not a "significant energy action" as defined in Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Further, we have concluded that this rule is not likely to have any adverse energy effects, since it addresses the means by which CFC and HCFC refrigerants are recovered, recycled, reclaimed, sold, or distributed in interstate commerce.

I. National Technology Transfer and Advancement Act

The National Technology Transfer and Advancement Act of 1995 (NTTAA), section 12(d), Public Law 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 rule is rule is an amendment to the recycling standards under section 608 of the Clean Air Act. This rule adopts an updated version of the industry standard for refrigerant recovery/recycling equipment (i.e., ARI Standard 740-1995) into regulation as appendix B2 of 40 CFR part 82, subpart F. This standard, as well as the 1993 version of the standard that was adopted into regulation, was developed by the Air Conditioning and Refrigeration Institute (ARI). ARI is the national trade association representing manufacturers of more than 90 percent of U.S. produced central air-conditioning and commercial refrigeration equipment.

J. Congressional Review Act

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.

A major rule cannot take effect until 60 days after it is published in the Federal Register. This action is not a "major rule" as defined by 5 U.S.C. 804(2). This rule will be effective September 22, 2003.

List of Subjects in 40 CFR Part 82

Environmental protection, Administrative practice and procedure, Air pollution control, Chemicals, Chlorofluorocarbons, Exports, Hydrochlorofluorocarbons, Imports, Interstate commerce, Nonessential products.

Dated: June 20, 2003.

Christine Todd Whitman, Administrator.

■ Part 82, chapter I, title 40, of the Code of Federal Regulations, 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. Section 82.152 is amended by revising the definition for "Certified refrigerant recovery or recycling equipment," "Major maintenance, service or repair," "MVAC-like appliance," "Reclaim," and "Small appliance," and by adding a new definition for "Parent company" in alphabetical order to read as follows:

§ 82.152 Definitions.

* * * * *

Certified refrigerant recovery or recycling equipment means equipment manufactured before November 15, 1993, that meets the standards in § 82.158(c), (e), or (g); equipment certified by an approved equipment testing organization to meet the standards in § 82.158(b), (d), or (f); or

equipment certified pursuant to § 82.36(a).

* * * * *

Major maintenance, service, or repair means any maintenance, service, or repair that involves the removal of any or all of the following appliance components: compressor, condenser, evaporator, or auxiliary heat exchange coil; or any maintenance, service, or repair that involves uncovering an opening of more than four (4) square inches of "flow area" for more than 15 minutes.

* * * * *

MVAC-like appliance means mechanical vapor compression, open-drive compressor appliances with a normal charge of 20 pounds or less of refrigerant used to cool the driver's or passenger's compartment of an off-road motor vehicle. This includes the air-conditioning equipment found on agricultural or construction vehicles. This definition is not intended to cover appliances using R-22 refrigerant.

* * * * *

Parent company means an individual, corporation, partnership, association, joint-stock company, or an unincorporated organization that can direct or cause the direction of management and policies of another entity, through the ownership of shares or otherwise.

* * * * *

Reclaim refrigerant means to reprocess refrigerant to all of the specifications in appendix A to 40 CFR part 82, subpart F (based on ARI Standard 700-1995, Specification for Fluorocarbons and Other Refrigerants) that are applicable to that refrigerant and to verify that the refrigerant meets these specifications using the analytical methodology prescribed in section 5 of appendix A of 40 CFR part 82, subpart F.

* * * * *

Small appliance means any appliance that is fully manufactured, charged, and hermetically sealed in a factory with five (5) pounds or less of a class I or class II substance used as a refrigerant, including, but not limited to, refrigerators and freezers (designed for home, commercial, or consumer use), medical or industrial research refrigeration equipment, room air conditioners (including window air conditioners and packaged terminal air heat pumps), dehumidifiers, under-the-counter ice makers, vending machines, and drinking water coolers.

* * * * *

■ 3. Section 82.154 is amended by: ■ a. Revising paragraph (g);

- b. Removing and reserving paragraph (h);
- c. Revising introductory text of paragraph (m);
- d. Revising paragraphs (m)(2) through (m)(8); and
- e. Designating paragraph (m)(9) as new paragraph

(o) To read as follows:

§ 82.154 Prohibitions.

* * * * *

(g) No person may sell, distribute, or offer for sale or distribution for use as a refrigerant any class I or class II substance consisting wholly or in part of used refrigerant unless:

(1) The class I or class II substance has been reclaimed as defined in § 82.152 by a person who has been certified as a reclaimer pursuant to § 82.164;

(2) The class I or class II substance was used only in an MVAC or MVAC-like appliance and is to be used only in an MVAC or MVAC-like appliance and recycled in accordance with § 82.34(d);

(3) The class I or class II substance is contained in an appliance that is sold or offered for sale together with the class I or class II substance;

(4) The class I or class II substance is being transferred between or among a parent company and one or more of its subsidiaries, or between or among subsidiaries having the same parent company; or

(5) The class I or class II substance is being transferred between or among a Federal agency or department and a facility or facilities owned by the same Federal agency or department.

(h) [reserved]

* * * * *

(m) No person may sell or distribute, or offer for sale or distribution, any substance that consists in whole or in part of a class I or class II substance for use as a refrigerant to any person unless:

* * * * *

(2) The buyer complies with § 82.166(b) and employs at least one technician who is certified as a Type I, Type II, Type III, or Universal technician in accordance with § 82.161;

(3) The buyer has been certified in accordance with 40 CFR part 82, subpart B and the refrigerant is either R-12 or an approved substitute consisting wholly or in part of a class I or class II substance for use in motor vehicle air conditioners in accordance with 40 CFR part 82, subpart G;

(4) The buyer complies with § 82.166 (b) and employs at least one technician who is certified in accordance with 40 CFR part 82, subpart B, and the refrigerant is either R-12 or an approved substitute consisting wholly or in part of

a class I or class II substance for use in motor vehicle air conditioners pursuant to 40 CFR part 82, subpart G. Nothing in this provision shall be construed to relieve persons of the requirements of § 82.34(b) or § 82.42 (b);

(5) The refrigerant is sold only for eventual resale to certified technicians or to appliance manufacturers (e.g., sold by a manufacturer to a wholesaler, sold by a technician to a reclaimer);

(6) The refrigerant is sold to an appliance manufacturer;

(7) The refrigerant is contained in an appliance with a fully assembled refrigerant circuit; or

(8) The refrigerant is charged into an appliance by a certified technician or an apprentice during maintenance, service, or repair of the appliance.

* * * * *

(o) Rules stayed for consideration. Notwithstanding any other provisions of this subpart, the effectiveness of 40 CFR 82.154(m), only as it applies to refrigerant contained in appliances without fully assembled refrigerant circuits, is stayed from April 27, 1995, until EPA takes final action on its reconsideration of these provisions. EPA will publish any such final action in the **Federal Register**.

* * * * *

■ 4. Section 82.156 is amended by revising paragraphs (a)(1)(i), introductory text of (a)(2)(i) and (a)(2)(i)(B) to read as follows:

§ 82.156 Required practices.

(a) * * *

(1) * * *

(i) Evacuation of the appliance to the atmosphere is not to be performed after completion of the maintenance, service, or repair, and the maintenance, service, or repair is not major as defined at § 82.152; or

* * * * *

(2)(i) If evacuation of the appliance to the atmosphere is not to be performed after completion of the maintenance, service, or repair, and if the maintenance, service, or repair is not major as defined at § 82.152, the appliance must:

* * * * *

(B) Be pressurized to a pressure no higher than 0 psig before it is opened if it is a low-pressure appliance. Persons must cover openings when isolation is not possible. Persons pressurizing low-pressure appliances that use refrigerants with boiling points at or below 85 degrees Fahrenheit at 29.9 inches of mercury (standard atmospheric pressure), (e.g. R-11 and R-123), must not use methods such as nitrogen, that require subsequent purging. Persons

pressurizing low-pressure appliances that use refrigerants with boiling points above 85 degrees Fahrenheit at 29.9 inches of mercury, e.g., R-113, must use heat to raise the internal pressure of the appliance as much as possible, but may use nitrogen to raise the internal pressure of the appliance from the level attainable through use of heat to atmospheric pressure; or

* * * * *

■ 5. Section 82.158 is amended by:

■ a. Revising paragraph (a);

■ b. Revising introductory text of paragraphs (b) and (b)(1) introductory text;

■ c. Designating paragraphs (b)(2) through (b)(6) as (b)(3) through (b)(7);

■ d. Revising the introductory text of newly designated paragraph (b)(3);

■ e. Revising newly designated paragraphs (b)(4), (b)(5), and (b)(7);

■ f. Adding new paragraph (b)(2);

■ g. Revising the introductory text of paragraph (d);

■ h. Revising paragraph (d)(2);

■ i. Adding paragraph (d)(3); and

■ j. Revising paragraph (j)(1); and

■ k. Adding paragraph (n) to read as follows:

§ 82.158 Standards for recycling and recovery equipment.

(a) Effective September 22, 2003, all manufacturers and importers of recycling and recovery equipment intended for use during the maintenance, service, or repair of appliances except MVACs and MVAC-like appliances or during the disposal of appliances except small appliances, MVACs, and MVAC-like appliances, shall have had such equipment certified by an approved equipment testing organization to meet the applicable requirements in paragraph (b)(1), (b)(2), or (d) of this section. All manufacturers and importers of recycling and recovery equipment intended for use during the maintenance, service, or repair of MVAC-like appliances shall have had such equipment certified pursuant to § 82.36(a).

* * * * *

(b) Equipment manufactured or imported on or after November 15, 1993 and before September 22, 2003, for use during the maintenance, service, or repair of appliances except small appliances, MVACs, and MVAC-like appliances or during the disposal of appliances except small appliances, MVACs, and MVAC-like appliances must be certified by an approved equipment testing organization to meet the requirements of paragraph (b)(1) of this section and the following requirements below. Equipment

manufactured or imported on or after September 22, 2003, for use during the maintenance, service, or repair of appliances except small appliances, MVACs, and MVAC-like appliances or during the disposal of appliances except small appliances, MVACs, and MVAC-like appliances must be certified by an approved equipment testing organization to meet the requirements of paragraph (b)(2) of this section and the following requirements.

(1) In order to be certified, the equipment must be capable of achieving the level of evacuation specified in Table 2 of this section under the conditions of appendix B1 of this subpart (based upon the ARI Standard 740-1993, Performance of Refrigerant Recovery, Recycling and/or Reclaim Equipment):

* * * * *

(2) In order to be certified, the equipment must be capable of achieving the level of evacuation specified in Table 2 of paragraph (b)(1) of this section under the conditions of appendix B2 of this subpart (based upon the ARI Standard 740-1995, Performance of Refrigerant Recovery, Recycling and/or Reclaim Equipment).

(3) Recovery or recycling equipment whose recovery efficiency cannot be tested according to the procedures in appendix B1 or B2 of this subpart as applicable may be certified if an

approved third-party testing organization adopts and performs a test that demonstrates, to the satisfaction of the Administrator, that the recovery efficiency of that equipment is equal to or better than that of equipment that:

* * * * *

(4) The equipment must meet the minimum requirements for certification under appendix B1 or B2 of this subpart as applicable.

(5) If the equipment is equipped with a noncondensables purge device, the equipment must not release more than three (3) percent of the quantity of refrigerant being recycled through noncondensables purging under the conditions of appendix B1 and B2 of this subpart as applicable.

* * * * *

(7) The equipment must have its liquid recovery rate and its vapor recovery rate measured under the conditions of appendix B1 or B2 as applicable, unless the equipment has no inherent liquid or vapor recovery rate.

* * * * *

(d) Equipment manufactured or imported on or after November 15, 1993 and before September 22, 2003, for use during the maintenance, service, or repair of small appliances must be certified by an approved equipment testing organization to be capable of achieving the requirements described in

either paragraph (d)(1) or (d)(2) of this section. Equipment manufactured or imported on or after September 22, 2003, for use during the maintenance, service, or repair of small appliances must be certified by an approved equipment testing organization to be capable of either paragraph (d)(1) or (d)(3) of this section:

* * * * *

(2) Achieving a four-inch vacuum under the conditions of appendix B1 of this subpart, based upon ARI Standard 740-1993; or

(3) Achieving a four-inch vacuum under the conditions of appendix B2 of this subpart, based upon ARI Standard 740-1995.

* * * * *

(j) * * *

(1) Retests of certified recycling or recovery equipment in accordance with paragraph (a) of this section or

* * * * *

(n) Effective October 22, 2003, equipment that is advertised or marketed as "recycling equipment" must be capable of recycling the standard contaminated refrigerant sample of appendix B2 of this subpart (based upon ARI Standard 740-1995), section 5, to the levels in the following table when tested under the conditions of appendix B2 of this subpart:

MAXIMUM LEVELS OF CONTAMINANTS PERMISSIBLE IN REFRIGERANT PROCESSED THROUGH EQUIPMENT ADVERTISED AS "RECYCLING" EQUIPMENT

| Contaminants | Low-pressure (R-11, R-123, R-113) systems | R-12 systems | All other systems |
|--|---|----------------------|-------------------|
| Acid Content (by wt.) | 1.0 PPM | 1.0 PPM | 1.0 PPM. |
| Moisture (by wt.) | 20 PPM | 10 PPM | 20 PPM. |
| Noncondensable Gas (by vol.) | N/A | 2.0% | 2.0%. |
| High Boiling Residues (by vol.) | 1.0% | 0.02% | 0.02%. |
| Chlorides by Silver Nitrate Test | No turbidity | No turbidity | No turbidity. |
| Particulates | Visually clean | Visually clean | Visually clean. |

■ 6. Section § 82.160 is amended by revising paragraphs (a) and (b)(3), revising paragraph (d), and removing paragraph (e) to read as follows:

§ 82.160 Approved equipment testing organizations.

(a) Any equipment testing organization may apply for approval by the Administrator to certify equipment pursuant to the standards in § 82.158 and appendices B2 or C of this subpart. The application shall be mailed to: Section 608 Recycling Program Manager; Global Programs Division; Mail Code: 6205J; U.S. Environmental Protection Agency; 1200 Pennsylvania Avenue, NW.; Washington, DC 20460.

(b) * * *

(3) Thorough knowledge of the standards and recordkeeping and reporting requirements as they appear in §§ 82.158 and 82.166 and Appendices B2 and/or C (as applicable) of this subpart.

* * * * *

(d) If at any time an approved testing organization is found to be conducting certification tests for the purposes of this subpart in a manner not consistent with the representations made in its application for approval under this section, the Administrator reserves the right to revoke approval in accordance with § 82.169. In such cases, the Administrator or her or his designated representative shall give notice to the

organization setting forth the basis for her or his determination.

■ 7. Section 82.161 is amended by revising paragraphs (a)(1) and (e) to read as follows:

§ 82.161 Technician certification.

(a) * * *

(1) Technicians, as defined in § 82.152, who maintain, service, or repair small appliances must be properly certified as Type I technicians.

* * * * *

(e) If at any time an approved program violates any of the above requirements, the Administrator reserves the right to revoke approval in accordance with § 82.169. In such cases, the

Administrator or her or his designated representative shall give notice to the organization setting forth the basis for her or his determination.

* * * * *

■ 8. Section 82.164 is amended by revising paragraph (g) to read as follows:

§ 82.164 Reclaimer certification.

* * * * *

(g) Failure to abide by any of the provisions of this subpart may result in revocation or suspension of the certification of the reclaimer in accordance with § 82.169. In such cases, the Administrator or her or his designated representative shall give notice to the organization setting forth the basis for her or his determination.

■ 9. Section 82.169 is added to subpart F to read as follows:

§ 82.169 Suspension and revocation procedures.

(a) Failure to abide by any of the provisions of this subpart may result in the revocation or suspension of the approval to certify technicians (under § 82.161), approval to act as a recovery/recycling equipment testing organization (under § 82.160), or reclaimer certification (under § 82.164), hereafter referred to as the "organization." In such cases, the Administrator or her or his designated representative shall give notice of an impending suspension to the person or organization setting forth the facts or conduct that provide the basis for the revocation or suspension.

(b) Any organization that has received notice of an impending suspension or revocation may choose to request a hearing and must file that request in writing within 30 days of the date of the Agency's notice at the address listed in § 82.160 and shall set forth their objections to the revocation or suspension and data to support the objections.

(c) If the Agency does not receive a written request for a hearing within 30 days of the date of the Agency's notice, the revocation will become effective upon the date specified in the notice of an impending suspension.

(d) If after review of the request and supporting data, the Administrator or her or his designated representative finds that the request raises a substantial factual issue, she or he shall provide the organization with a hearing.

(e) After granting a request for a hearing the Administrator or her or his designated representative shall designate a Presiding Officer for the hearing.

(f) The hearing shall be held as soon as practicable at a time and place

determined by the Administrator, the designated representative, or the Presiding Officer.

(g) The Administrator or her or his designated representative may, at his or her discretion, direct that all argument and presentation of evidence be concluded within a specified period established by the Administrator or her or his designated representative. Said period may be no less than 30 days from the date that the first written offer of a hearing is made to the applicant. To expedite proceedings, the Administrator or her or his designated representative may direct that the decision of the Presiding Officer (who need not be the Administrator) shall be the final EPA decision.

(h) Upon appointment pursuant to paragraph (e) of this section, the Presiding Officer will establish a hearing file. The file shall consist of the following:

(1) The notice issued by the Administrator under § 82.169(a);

(2) the request for a hearing and the supporting data submitted therewith;

(3) all documents relating to the request for certification and all documents submitted therewith; and

(4) correspondence and other data material to the hearing.

(i) The hearing file will be available for inspection by the petitioner at the office of the Presiding Officer.

(j) An applicant may appear in person or may be represented by counsel or by any other duly authorized representative.

(k) The Presiding Officer, upon the request of any party or at his or her discretion, may arrange for a pre-hearing conference at a time and place he or she specifies. Such pre-hearing conferences will consider the following:

(1) Simplification of the issues;

(2) Stipulations, admissions of fact, and the introduction of documents;

(3) Limitation of the number of expert witnesses;

(4) Possibility of agreement disposing of any or all of the issues in dispute; and

(5) Such other matters as may aid in the disposition of the hearing, including such additional tests as may be agreed upon by the parties.

(l) The results of the conference shall be reduced to writing by the Presiding Officer and made part of the record.

(m) Hearings shall be conducted by the Presiding Officer in an informal but orderly and expeditious manner. The parties may offer oral or written evidence, subject to the exclusion by the Presiding Officer of irrelevant, immaterial, and repetitious evidence.

(n) Witnesses will not be required to testify under oath. However, the

Presiding Officer shall call to the attention of witnesses that their statements may be subject to the provisions of 18 U.S.C. 1001, which imposes penalties for knowingly making false statements or representations or using false documents in any matter within the jurisdiction of any department or agency of the United States.

(o) Any witness may be examined or cross-examined by the Presiding Officer, the parties, or their representatives.

(p) Hearings shall be reported verbatim. Copies of transcripts of proceedings may be purchased by the petitioner from the reporter.

(q) All written statements, charts, tabulations, and similar data offered in evidence at the hearings shall, upon a showing satisfactory to the Presiding Officer of their authenticity, relevancy, and materiality, be received in evidence and shall constitute a part of the record.

(r) Oral argument may be permitted at the discretion of the Presiding Officer and shall be reported as part of the record unless otherwise ordered by the Presiding Officer.

(s) The Presiding Officer shall make an initial decision that shall include written findings and conclusions and the reasons or basis regarding all the material issues of fact, law, or discretion presented on the record. The findings, conclusions, and written decision shall be provided to the parties and made a part of the record. The initial decision shall become the decision of the Administrator without further proceedings, unless there is an appeal to the Administrator or motion for review by the Administrator within 20 days of the date the initial decision was filed.

(t) On appeal from or review of the initial decision, the Administrator or her or his designated representative shall have all the powers which he or she would have in making the initial decision, including the discretion to require or allow briefs, oral argument, the taking of additional evidence, or a remand to the Presiding Officer for additional proceedings. The decision by the Administrator or her or his designated representative shall include written findings and conclusions and the reasons or basis therefore on all the material issues of fact, law, or discretion presented on the appeal or considered in the review.

■ 10. Appendix A to subpart F is revised to read as follows:

Appendix A to Subpart F of Part 82— Specifications for Fluorocarbon Refrigerants

This appendix is based on Air-Conditioning and Refrigeration Institute Standard 700–1995:

Section 1. Purpose

1.1 *Purpose.* The purpose of this standard is to evaluate and accept/reject refrigerants regardless of source (*i.e.*, new, reclaimed and/or repackaged) for use in new and existing refrigeration and air-conditioning products as required under 40 CFR part 82, subpart F.

1.1.1 *Intent.* This standard is intended for the guidance of the industry including manufacturers, refrigerant reclaimers, repackagers, distributors, installers, servicemen, contractors and for consumers.

1.1.2 *Review and Amendment.* This standard is subject to review and amendment as the technology advances.

Section 2. Scope

2.1 *Scope.* This standard specifies acceptable levels of contaminants (purity requirements) for various fluorocarbon and other refrigerants regardless of source and lists acceptable test methods. These refrigerants are R–11; R–12; R–13; R–22; R–113; R–114; R–123; R–124; R–500; R–502; and R–503; as referenced in the ANSI/ASHRAE Standard 34–1992. (American Society of Heating, Refrigerating and Air-conditioning Engineers, Inc., Standard 34–1992). Copies may be obtained from ASHRAE Publications Sales, 1791 Tullie Circle, NE, Atlanta, GA 30329. Copies may also be inspected at Public Docket No. A–92–01, Environmental Protection Agency, 1301 Constitution Ave., NW., Washington, DC in room B–108.

Section 3. Definitions

3.1 *Shall, Should, Recommended, or It Is Recommended.* “Shall,” “should,” “recommended,” or “it is recommended” shall be interpreted as follows:

3.1.1 *Shall.* Where “shall” or “shall not” is used for a provision specified, that provision is mandatory if compliance with the standard is claimed.

3.1.2 *Should, Recommended, or It Is Recommended.* “Should,” “recommended,” or “it is recommended” is used to indicate provisions which are not mandatory but which are desirable as good practice.

Section 4. Characterization of Refrigerants and Contaminants

4.1 *Characterization.* Characterization of refrigerants and contaminants addressed are listed in the following general classifications:

4.1.1 Characterization

- a. Gas Chromatography
- b. Boiling point and boiling point range

4.1.2 Contaminants

- a. Water
- b. Chloride
- c. Acidity
- d. High boiling residue
- e. Particulates/solids
- f. Non-condensables
- g. Impurities including other refrigerants

Section 5. Sampling, Summary of Test Methods and Maximum Permissible Contaminant Levels

5.1 *Referee Test.* The referee test methods for the various contaminants are summarized in the following paragraphs. Detailed test procedures are included in *Appendix—C to ARI Standard 700–1995: Analytical Procedures for ARI Standard 700–1995*, 1995, Air-Conditioning and Refrigeration Institute. *Appendix C to ARI Standard 700–1995* is incorporated by reference. [This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be obtained from the Air-Conditioning and Refrigeration Institute, 4301 North Fairfax Drive, Arlington, Virginia 22203. Copies may also be inspected at Public Docket No. A–92–01, Environmental Protection Agency, 1301 Constitution Ave., NW., Washington, DC, in room B–108 or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC]. If alternative test methods are employed, the user must be able to demonstrate that they produce results equivalent to the specified referee method.

5.2 Refrigerant Sampling.

5.2.1 *Sampling Precautions.* Special precautions should be taken to assure that representative samples are obtained for analysis. Sampling shall be done by trained laboratory personnel following accepted sampling and safety procedures.

5.2.2 *Gas Phase Sample.* A gas phase sample shall be obtained for determining the non-condensables. Since non-condensable gases, if present, will concentrate in the vapor phase of the refrigerant, care must be exercised to eliminate introduction of air during the sample transfer. Purging is not an acceptable procedure for a gas phase sample since it may introduce a foreign product. Since R–11, R–113, and R–123 have normal boiling points at or above room temperature, non-condensable determination is not required for these refrigerants.

5.2.2.1 *Connection.* The sample cylinder shall be connected to an evacuated gas sampling bulb by means of a manifold. The manifold should have a valve arrangement that facilitates evacuation of all connecting tubing leading to the sampling bulb.

5.2.2.2 *Equalizing Pressures.* After the manifold has been evacuated, close the valve to the pump and open the valve on the system. Allow the pressure to equilibrate and close valves.

5.2.3 *Liquid Phase Sample.* A liquid phase sample is required for all tests listed in this standard except the test for non-condensables.

5.2.3.1 *Preparation.* Place a clean, empty sample cylinder with the valve open in an oven at 110°C (230°F) for one hour. Remove it from the oven while hot, immediately connect to an evacuation system and evacuate to less than 1 mm mercury (1000 microns). Close the valve and allow it to cool. Weigh the empty cylinder.

5.2.3.2 *Manifolding.* The valve and lines from the unit to be sampled shall be clean and dry. The cylinder shall be connected to an evacuated gas sampling cylinder by means of a manifold. The manifold should have a

valve arrangement that facilitates evacuation of all connecting tubing leading to the sampling cylinder.

5.2.3.3 *Liquid Sampling.* After the manifold has been evacuated, close the valve to the pump and open the valve on the system. Take the sample as a liquid by chilling the sample cylinder slightly. Accurate analysis requires that the sample container be filled to at least 60% by volume, however under no circumstances should the cylinder be filled to more than 80% by volume. This can be accomplished by weighing the empty cylinder and then the cylinder with refrigerant. When the desired amount of refrigerant has been collected, close the valve(s) and disconnect the sample cylinder immediately.

5.2.3.4 *Record Weight.* Check the sample cylinder for leaks and record the gross weight.

5.3 Refrigerant Characterization.

5.3.1 *Primary Method.* The primary method shall be gas chromatography (GC) as described in Appendix-C to ARI Standard 700–1995. The chromatogram of the sample shall be compared to known standards.

5.3.2 *Alternative Method.* Determination of the boiling point and boiling point range is an acceptable alternative test method which can be used to characterize refrigerants. The test method shall be that described in the Federal Specification for “Fluorocarbon Refrigerants,” BB-F–1421 B, dated March 5, 1982, section 4.4.3.

5.3.3 *Required Values.* The required values for boiling point and boiling point range are given in Table 1A, *Physical Properties of Single Component Refrigerants*; Table 1B, *Physical Properties of Zeotropic Blends (400 Series Refrigerants)*; and Table 1C, *Physical Properties of Azeotropic Blends (500 Series Refrigerants)*.

5.4 Water Content.

5.4.1 *Method.* The Coulometric Karl Fischer Titration shall be the primary test method for determining the water content of refrigerants. This method is described in *Appendix-C to ARI Standard 700–1995*. This method can be used for refrigerants that are either a liquid or a gas at room temperature, including refrigerants 11, 113, and 123. For all refrigerants, the sample for water analysis shall be taken from the liquid phase of the container to be tested. Proper operation of the analytical method requires special equipment and an experienced operator. The precision of the results is excellent if proper sampling and handling procedures are followed. Refrigerants containing a colored dye can be successfully analyzed for water using this method.

5.4.2 *Limits.* The value for water content shall be expressed as parts per million by weight and shall not exceed the maximum specified (*see* Tables 1A, 1B, and 1C).

5.5 *Chloride.* The refrigerant shall be tested for chloride as an indication of the presence of hydrochloric acid and/or metal chlorides. The recommended procedure is intended for use with new or reclaimed refrigerants. Significant amounts of oil may interfere with the results by indicating a failure in the absence of chloride.

5.5.1 *Method.* The test method shall be that described in *Appendix-C to ARI*

Standard 700–1995. The test will show noticeable turbidity at chloride levels of about 3 ppm by weight or higher.

5.5.2 *Turbidity.* The results of the test shall not exhibit any sign of turbidity. Report the results as “pass” or “fail.”

5.6 *Acidity.*

5.6.1 *Method.* The acidity test uses the titration principle to detect any compound that is highly soluble in water and ionizes as an acid. The test method shall be that described in *Appendix—C to ARI Standard 700–1995.* This test may not be suitable for determination of high molecular weight organic acids; however, these acids will be found in the high boiling residue test outlined in 5.7. The test requires a 100 to 120 gram sample and has a detection limit of 0.1 ppm by weight calculated as HCl.

5.6.2 *Limits.* The maximum permissible acidity is 1 ppm by weight as HCl.

5.7 *High Boiling Residue.*

5.7.1 *Method.* High boiling residue shall be determined by measuring the residue of a standard volume of refrigerant after evaporation. The refrigerant sample shall be evaporated at room temperature or at a temperature 45°C (115°F) for all refrigerants, except R–113 which shall be evaporated at 60°C (140°F), using a Goetz bulb as specified in *Appendix—C to ARI Standard 700–1995.* Oils and/or organic acids will be captured by this method.

5.7.2 *Limits.* The value for high boiling residue shall be expressed as a percentage by volume and shall not exceed the maximum percent specified (see Tables 1A, 1B, and 1C). An alternative gravimetric method is described in *Appendix—C to ARI Standard 700–1995.*

5.8 *Method of Tests for Particulates and Solids.*

5.8.1 *Method.* A measured amount of sample is evaporated from a Goetz bulb under controlled temperature conditions. The particulates/solids shall be determined by visual examination of the Goetz bulb prior to the evaporation of refrigerant. Presence of dirt, rust or other particulate contamination is reported as “fail.” For details of this test method, refer to Part 3 of *Appendix—C to ARI Standard 700–1995.*

5.9 *Non-Condensables.*

5.9.1 *Sample.* A vapor phase sample shall be used for determination of non-condensables. Non-condensable gases consist primarily of air accumulated in the vapor phase of refrigerants. The solubility of air in the refrigerant’s liquid phase is extremely low and air is not significant as a liquid phase contaminant. The presence of non-condensable gases may reflect poor quality control in transferring refrigerants to storage tanks and cylinders.

5.9.2 *Method.* The test method shall be gas chromatography with a thermal

conductivity detector as described in *Appendix—C to ARI Standard 700–1995.*

5.9.3 *Limit.* The maximum level of non-condensables in the vapor phase of a refrigerant in a container shall not exceed 1.5% by volume (see Tables 1A, 1B, and 1C).

5.10 *Impurities, including Other Refrigerants.*

5.10.1 *Method.* The amount of other impurities including other refrigerants in the subject refrigerant shall be determined by gas chromatography as described in *Appendix—C to ARI Standard 700–1995.*

5.10.2 *Limit.* The subject refrigerant shall not contain more than 0.5% by weight of impurities including other refrigerants (see Tables 1A, 1B, and 1C).

Section 6. Reporting Procedure

6.1 *Reporting Procedure.* The source (manufacturer, reclaimer or repackager) of the packaged refrigerant shall be identified. The refrigerant shall be identified by its accepted refrigerant number and/or its chemical name. Maximum permissible levels of contaminants are shown in Tables 1A, 1B, and 1C. Test results shall be tabulated in a like manner.

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Table 1A. Physical Properties of Single Component Refrigerants

| | Reporting Units | Reference (Subclause) | R-11 | R-12 | R-13 | R-22 | R-113 | R-114 | R-123 | R-124 |
|---|------------------------|-----------------------|-------|-------|--------|-------|----------------|-----------------|----------------|----------------|
| <i>CHARACTERISTICS*:</i> | | | | | | | | | | |
| Boiling Point* | °F @ 1.00 atm | --- | 74.9 | -21.6 | -114.6 | -41.4 | 117.6 | 38.8 | 82.6 | 12.2 |
| | °C @ 1.00 atm | --- | 23.8 | -29.8 | -81.4 | -40.8 | 47.6 | 3.8 | 27.9 | -11.0 |
| Boiling Point Range* | K | --- | 0.3 | 0.3 | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Typical Isomer Content | by weight | --- | | | | | 0-1% R-113a | 0-30% R-114a | 0-8% R-123a | 0-5% R-124a |
| <i>VAPOR PHASE CONTAMINANTS:</i> | | | | | | | | | | |
| Air and other non-condensables | % by volume @ 25°C | 5.9 | N/A** | 1.5 | 1.5 | 1.5 | N/A** | 1.5 | N/A** | 1.5 |
| <i>LIQUID PHASE CONTAMINANTS:</i> | | | | | | | | | | |
| Water | ppm by weight | 5.4 | 20 | 10 | 10 | 10 | 20 | 10 | 20 | 10 |
| All other impurities including refrigerants | % by weight | 5.1 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 |
| High boiling residue | % by volume | 5.7 | 0.01 | 0.01 | 0.05 | 0.01 | 0.03 | 0.01 | 0.01 | 0.01 |
| Particulates/solids | Visually clean to pass | 5.8 | pass | pass | pass | pass | pass | pass | pass | pass |
| Acidity | ppm by weight | 5.6 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Chlorides*** | No visible turbidity | 5.5 | pass | pass | pass | pass | pass | pass | pass | pass |

* Boiling points and boiling point ranges, although not required, are provided for informational purposes.

** Since R-11, R-13, and R-123 have normal boiling points at or above room temperature, non-condensable determinations are not required for these refrigerants.

*** Recognized chloride level for pass/fail is 3ppm.

Table 1B. Physical Properties of Zeotropic Blends (400 Series Refrigerants)

| | Reporting Units | Reference (Subclause) | R-401A | R-401B | R-402A | R-402B |
|---|------------------------|-----------------------|-----------------------|----------------------|-----------------|-----------------|
| CHARACTERISTICS*: | | | | | | |
| Refrigerant Components | | | R-22/152a/124 | R-125/290/22 | | R-125/290/22 |
| Nominal Comp, weight% | | | 53/13/34 | 61/11/28 | 60/2/38 | 38/2/60 |
| Allowable Comp, weight% | | | 51-54/11.5-13.5/33-35 | 59-63/9.5-11.5/27-29 | 58-62/1-3/36-40 | 36-40/1-3/58-62 |
| Boiling Point* | °F @ 1.00 atm | --- | -27.7 to -18.1 | -30.4 to -21.2 | -54.8 to -53.9 | -53.3 to -49.0 |
| | °C @ 1.00 atm | --- | -33.2 to -27.8 | -34.7 to -29.6 | -48.2 to -47.7 | -47.4 to -45.0 |
| Boiling Point Range* | K | --- | 5.4 | 5.1 | 0.5 | 2.4 |
| VAPOR PHASE CONTAMINANTS: | | | | | | |
| H ₂ and other non-condensables | % by volume @ 25°C | 5.9 | 1.5 | 1.5 | 1.5 | 1.5 |
| LIQUID PHASE CONTAMINANTS: | | | | | | |
| Water | ppm by weight | 5.4 | 10 | 10 | 10 | 10 |
| All other impurities including refrigerants | % by weight | 5.1 | 0.50 | 0.50 | 0.50 | 0.50 |
| High boiling residue | % by volume | 5.7 | 0.01 | 0.01 | 0.01 | 0.01 |
| Particulates/solids | Visually clean to pass | 5.8 | pass | pass | pass | pass |
| Acidity | ppm by weight | 5.6 | 1.0 | 1.0 | 1.0 | 1.0 |
| Chlorides** | No visible turbidity | 5.5 | pass | pass | pass | pass |

* Boiling points and boiling point ranges, although not required, are provided for informational purposes.

** Recognized chloride level for pass/fail is 3ppm.

| Table 1C. Physical Properties of Azeotropic Blends (500 Series Refrigerants) | | | | | |
|--|------------------------|-----------------------|-------------------------|-------------------------|-----------------|
| | Reporting Units | Reference (Subclause) | R500 | R502 | R503 |
| CHARACTERISTICS*: | | | | | |
| Refrigerant Components | | | | | |
| Nominal Comp, weight% | | | R12/152a | R22/115 | R23/13 |
| Allowable Comp, weight% | | | 73.8/26.2 | 48.8/51.2 | 40.1/59.9 |
| | | | 72.8-74.8/ 25.2-27.2 | 44.8-52.8/ 47.2-55.2 | 39-41/ 59-61 |
| Boiling Point* | °F @ 1.00 atm | --- | -28.1 | -49.7 | -127.7 |
| | °C @ 1.00 atm | --- | -33.4 | -45.4 | -88.7 |
| Boiling Point Range* | K | --- | 0.5 | 0.5 | 0.5 |
| VAPOR PHASE CONTAMINANTS: | | | | | |
| Air and other non-condensables | % by volume @ 25°C | 5.9 | 1.5 | 1.5 | 1.5 |
| LIQUID PHASE CONTAMINANTS: | | | | | |
| Water | ppm by weight | 5.4 | 10 | 10 | 10 |
| All other impurities including refrigerants | % by weight | 5.1 | 0.50 | 0.50 | 0.50 |
| High boiling residue | % by volume | 5.7 | 0.05 | 0.01 | 0.01 |
| Particulates/solids | Visually clean to pass | 5.8 | pass | pass | pass |
| Acidity | ppm by weight | 5.6 | 1.0 | 1.0 | 1.0 |
| Chlorides** | No visible turbidity | 5.5 | pass | pass | pass |

* Boiling points and boiling point ranges, although not required, are provided for informational purposes.

** Recognized chloride level for pass/fail is 3ppm.

References

Listed here are all standards, handbooks, and other publications essential to the formation and implementation of the standard. All references in this Appendix are considered as part of this standard.

ASHRAE *Terminology of Heating, Ventilating, Air Conditioning and Refrigeration*, American Society of Heating Refrigeration and Air-Conditioning Engineers, 1992, 1791 Tullie Circle NE., Atlanta, GA 30329-2305; U.S.A.

ASHRAE Standard 34-1992, *Number Designation and Safety Classification of Refrigerants*, American Society of Heating Refrigeration and Air-Conditioning Engineers, 1992, 1791 Tullie Circle NE., Atlanta, GA 30329-2305; U.S.A.

Appendix C to ARI Standard 700-1995: *Analytical Procedures to ARI Standard 700-1995, Specifications for Fluorocarbon and Other Refrigerants*, Air-Conditioning and Refrigeration Institute, 1995, 4301 North Fairfax Drive, Suite 425, Arlington, VA 22203; U.S.A.

Federal Specification for *Fluorocarbon Refrigerants, BB-F-1421-B*, dated March 5, 1992, Office of the Federal Register, National Archives and Records Administration, 1992, 800 North Capitol Street, NW., Washington, DC 20402; U.S.A.

■ 11. Appendix B to subpart F is amended by:

- a. Designating appendix B as appendix B1;
- b. Revising the introductory text of appendix B and sections 3.2 through 3.4;
- c. Adding paragraph 11.3;
- d. Removing section 12; and
- e. Adding appendix B2 to read as follows:

Appendix B1 to Subpart F of Part 82—Performance of Refrigerant Recovery, Recycling, and/or Reclaim Equipment

This appendix is based on the Air-Conditioning and Refrigeration Institute Standard 740-1993.

* * * * *

Section 3. Definitions

* * * * *

- 3.2 Recover. Reference 40 CFR 82.152.
- 3.3 Recycle. Reference 40 CFR 82.152.
- 3.4 Reclaim. Reference 40 CFR 82.152.

* * * * *

11.3 The nameplate shall also conform to the labeling requirements established for certified recycling and recovery equipment established at 40 CFR 82.158(h).

* * * * *

Appendix B2 to Subpart F of Part 82—Performance of Refrigerant Recovery, Recycling, and/or Reclaim Equipment

This appendix is based on the Air-Conditioning and Refrigeration Institute Standard 740-1995.

Section 1

Purpose 1.1 *Purpose*. The purpose of this standard is to establish methods of testing for rating and evaluating the performance of

refrigerant recovery, and/or recycling equipment and general equipment requirements (herein referred to as “equipment”) for contaminant or purity levels, capacity, speed and purge loss to minimize emission into the atmosphere of designated refrigerants.

Section 2

Scope 2.1 *Scope*. This standard applies to equipment for recovering and/or recycling single refrigerants, azeotropics, zeotropic blends, and their normal contaminants from refrigerant systems. This standard defines the test apparatus, test gas mixtures, sampling procedures and analytical techniques that will be used to determine the performance of refrigerant recovery and/or recycling equipment (hereinafter, “equipment”).

Section 3. Definitions

3.1 *Definitions*. All terms in this appendix will follow the definitions in § 82.152 unless otherwise defined in this appendix.

3.2 *Clearing Refrigerant*. Procedures used to remove trapped refrigerant from equipment before switching from one refrigerant to another.

3.3 *High Temperature Vapor Recovery Rate*. For equipment having at least one designated refrigerant (see 11.2) with a boiling point in the range of -50 to $+10^{\circ}\text{C}$, the rate will be measured for R-22, or the lowest boiling point refrigerant if R-22 is not a designated refrigerant.

3.4 *Published Ratings*. A statement of the assigned values of those performance characteristics, under stated rating conditions, by which a unit may be chosen to fit its application. These values apply to all units of like nominal size and type (identification) produced by the same manufacturer. As used herein, the term “published rating” includes the rating of all performance characteristics shown on the unit or published in specifications, advertising or other literature controlled by the manufacturer, at stated rating conditions.

3.5 *Push/Pull Method*. The push/pull refrigerant recovery method is defined as the process of transferring liquid refrigerant from a refrigeration system to a receiving vessel by lowering the pressure in the vessel and raising the pressure in the system, and by connecting a separate line between the system liquid port and the receiving vessel.

3.6 *Recycle Flow Rate*. The amount of refrigerant processed divided by the time elapsed in the recycling mode. For equipment which uses a separate recycling sequence, the recycle rate does not include the recovery rate (or elapsed time). For equipment which does not use a separate recycling sequence, the recycle rate is a rate based solely on the higher of the liquid or vapor recovery rate, by which the contaminant levels were measured.

3.7 *Residual Trapped Refrigerant*. Refrigerant remaining in equipment after clearing.

3.8 *Shall, Should, Recommended or It Is Recommended* shall be interpreted as follows:

3.8.1 *Shall*. Where “shall” or “shall not” is used for a provision specified, that

provision is mandatory if compliance with this appendix is claimed.

3.8.2 *Should, Recommended or It Is Recommended* is used to indicate provisions which are not mandatory but which are desirable as good practice.

3.9 *Standard Contaminated Refrigerant Sample*. A mixture of new or reclaimed refrigerant and specified quantities of identified contaminants which constitute the mixture to be processed by the equipment under test. These contaminant levels are expected only from severe service conditions.

3.10 *Trapped Refrigerant*. The amount of refrigerant remaining in the equipment after the recovery or recovery/recycling operation but before clearing.

3.11 *Vapor Recovery Rate*. The average rate that refrigerant is withdrawn from the mixing chamber between two pressures as vapor recovery rate is changing pressure and temperature starting at saturated conditions either 24°C or at the boiling point 100 kPa (abs), whichever is higher. The final pressure condition is 10% of the initial pressure, but not lower than the equipment final recovery vacuum and not higher than 100 kPa (abs).

Section 4. General Equipment Requirements

4.1 *Equipment Information*. The equipment manufacturer shall provide operating instructions, necessary maintenance procedures and source information for replacement parts and repair.

4.2 *Filter Replacement*. The equipment shall indicate when any filter/drier(s) needs replacement. This requirement can be met by use of a moisture transducer and indicator light, by use of a sight glass/moisture indicator or by some measurement of the amount of refrigerant processed such as a flow meter or hour meter. Written instructions such as “to change the filter every 181 kg, or every 30 days” shall not be acceptable except for equipment in large systems where the liquid recovery rate is greater than 11.3 kg/min where the filter/drier(s) would be changed for every job.

4.3 *Purge of Non-Condensable*. If non-condensables are purged, the equipment shall either automatically purge non-condensables or provide indicating means to guide the purge process.

4.4 *Purge Loss*. The total refrigerant loss due to purging non-condensables, draining oil and clearing refrigerant (see 9.5) shall be less than 3% (by weight) of total processed refrigerant.

4.5 *Permeation Rate*. High pressure hose assemblies $\frac{5}{8}$ in. [16 mm] nominal and smaller shall not exceed a permeation rate of 3.9 g/cm²/yr (internal surface) at a temperature of 48.8°C. Hose assemblies that UL recognized as having passed ANSI/UL 1963 requirements shall be accepted without testing. See 7.1.4.

4.6 *Clearing Trapped Refrigerant*. For equipment rated for more than one refrigerant, the manufacturer shall provide a method and instructions which will accomplish connections and clearing within 15 minutes. Special equipment, other than a vacuum pump or manifold gauge set shall be furnished. The clearing procedure shall not rely upon the storage cylinder below saturated pressure conditions at ambient temperature.

4.7 *Temperature.* The equipment shall be evaluated at 24°C with additional limited evaluation at 40°C. Normal operating conditions range from 10°C to 40°C.

4.8 *Exemptions.* Equipment intended for recovery only shall be exempt from 4.2 and 4.3.

Section 5. Contaminated Refrigerants

5.1 *Sample Characteristics.* The standard contaminated refrigerant sample shall have the characteristics specified in Table 1, except as provided in 5.2.

5.2 *Recovery-Only Testing.* Recovery equipment not rated for any specific contaminant shall be tested with new or reclaimed refrigerant.

Section 6. Test Apparatus

6.1 *General Recommendations.* The recommended test apparatus is described in the following paragraphs. If alternate test apparatus are employed, the user shall be able to demonstrate that they produce results equivalent to the specified referee apparatus.

6.2 *Self-Contained Equipment Test Apparatus.* The apparatus, shown in Figure 1, shall consist of:

6.2.1 *Mixing Chamber.* A mixing chamber consisting of a tank with a conical-shaped bottom, a bottom port and piping for delivering refrigerant to the equipment, various ports and valves for adding refrigerant to the chamber and stirring means for mixing.

6.2.2 *Filling Storage Cylinder.* The storage cylinder to be filled by the refrigerant transferred shall be cleaned and at the

pressure of the recovered refrigerant at the beginning of the test. It will not be filled over 80%, by volume.

6.2.3 *Vapor Feed.* Vapor refrigerant feed consisting of evaporator, control valves and piping to create a 3.0°C superheat condition at an evaporating temperature of 21°C ±2K.

6.2.4 *Alternative Vapor Feed.* An alternative method for vapor feed shall be to pass the refrigerant through a boiler and then through an automatic pressure regulating valve set at different saturation pressures, moving from saturated pressure at 24°C to final pressure of recovery.

6.2.5 *Liquid Feed.* Liquid refrigerant feed consisting of control valves, sampling port and piping.

6.2.6 *Instrumentation.* Instrumentation capable of measuring weight, temperature, pressure and refrigerant loss, as required.

TABLE 1.—STANDARD CONTAMINATED REFRIGERANT SAMPLES

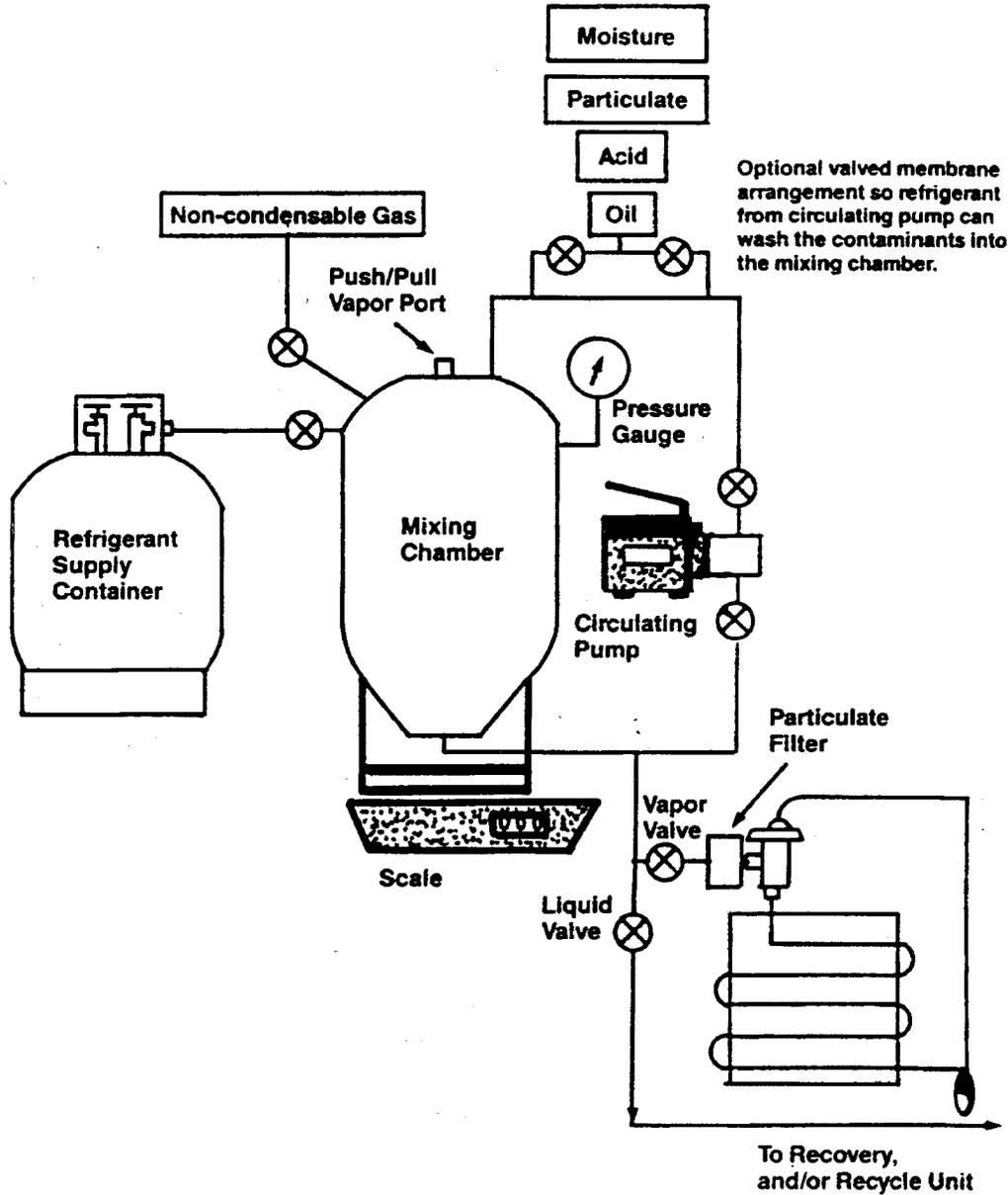
| | R11 | R12 | R13 | R22 | R113 | R114 | R123 | R134a | R500 | R502 | R503 |
|---|-----|-----|-------|-----|------|------|------|------------------|------|------|-------|
| Moisture Content: ppm by Weight of Pure refrigerant | 100 | 80 | 30 | 200 | 100 | 85 | 200 | 200 | 200 | 200 | 30 |
| Particulate Content: ppm by Weight of Pure Refrigerant Characterized by ¹ | 80 | 80 | NA | 80 | 80 | 80 | 80 | 80 | 80 | 80 | NA |
| Acid Content: ppm by Weight of Pure Refrigerant—(mg KOH per kg Refrigerant) Characterized by ² | 500 | 100 | NA | 500 | 400 | 200 | 500 | 100 | 100 | 100 | NA |
| Mineral Oil Content: | | | | | | | | | | | |
| % by Weight of Pure Refrigerant | 20 | 5 | NA | 5 | 20 | 20 | 20 | 5 | 5 | 5 | NA |
| Viscosity (SUS) | 300 | 150 | | 300 | 300 | 300 | 300 | 150 ³ | 150 | 150 | |
| Non-Condensable Gases (Air Content): % by Volume | NA | 3 | 3 | 3 | NA | 3 | NA | 3 | 3 | 3 | 3 |

¹ Particulate content shall consist of inert materials and shall comply with particulate requirements in appendix B.

² Acid consists of 60% oleic acid and 40% hydrochloric acid on a total number basis.

³ Synthetic ester-based oil.

Figure 1. Test Apparatus for Self-Contained Equipment



BILLING CODE 6560-50-C

6.3 *Size.* The size of the mixing chamber shall be a minimum of .09 m³. The bottom port and the refrigerant feed shall depend on

the size of the equipment. Typically, the mixing valves and piping shall be 9.5 mm. For large equipment to be used on chillers, the minimum inside diameter of ports, valves

and pipings shall be the smaller of the manufacturer's recommendation or 37 mm.

6.4 *System Dependent Equipment Test Apparatus.* This test apparatus is to be used

for final recovery vacuum rating of all system dependent equipment.

6.4.1 *Test Setup.* The test apparatus shown in Figure 2 consists of a complete refrigeration system. The manufacturer shall identify the refrigerants to be tested. The test apparatus can be modified to facilitate operation or testing of the system dependent equipment if the modifications to the apparatus are specifically described within the manufacturer's literature. (See Figure 2.) A 6.3 mm balance line shall be connected across the test apparatus between the high and low-pressure sides, with an isolation valve located at the connection to the compressor high side. A 6.3 mm access port with a valve core shall be located in the balance line for the purpose of measuring final recovery vacuum at the conclusion of the test.

Section 7. Performance Testing

7.1 General Testing.

7.1.1 *Temperatures.* Testing shall be conducted at an ambient temperature of 24°C ±1K except high temperature vapor recovery shall be at 40°C ±1K. The evaporator conditions of 6.2.3 shall be maintained as long as liquid refrigerant remains in the mixing chamber.

7.1.2 *Refrigerants.* The equipment shall be tested for all designated refrigerants (see

11.2). All tests in Section 7 shall be completed for each refrigerant before starting tests with the next refrigerant.

7.1.3 *Selected Tests.* Tests shall be as appropriate for the equipment type and ratings parameters selected (see 9.9, 11.1 and 11.2).

7.1.4 *Hose Assemblies.* For the purpose of limiting refrigerant emissions to the atmosphere, hose assemblies shall be tested for permeation according to ANSI/UL Standard 1963, Section 40.10.

7.2 *Equipment Preparation and Operation.* The equipment shall be prepared and operated per the operating instructions.

7.3 *Test Batch.* The test batch consisting of refrigerant sample (see Section 5) of the test refrigerant shall be prepared and thoroughly mixed. Continued mixing or stirring shall be required during the test while liquid refrigerant remains in the mixing chamber. The mixing chamber shall be filled to 80% level by volume.

7.3.1 *Control Test Batch.* Prior to starting the test for the first batch for each refrigerant, a liquid sample will be drawn from the mixing chamber and analyzed per Section 8 to assure that contaminant levels match Table 1 within ±10 ppm for moisture, ±20 ppm for particulate, ±20 ppm for oleic acid and ±0.5% for oil.

7.4 *Recovery Tests (Recovery and Recovery/Recycle Equipment).*

7.4.1 *Determining Recovery Rates.* The liquid and vapor refrigerant recovery rates shall be measured during the first test batch for each refrigerant (see 9.1, 9.2 and 9.4). Equipment preparation and recovery cylinder changeover shall not be included in elapsed time measurements for determining vapor recovery rate and liquid refrigerant recovery rate. Operations such as subcooling the recovery cylinder shall be included. Recovery cylinder shall be the same size as normally furnished or specified in the instructions by the equipment manufacturer. Oversized tanks shall not be permitted.

7.4.1.1 *Liquid Refrigerant Recovery Rate.* If elected, the recovery rate using the liquid refrigerant feed means (see 6.2.5) shall be determined. After the equipment reaches stabilized conditions of condensing temperature and/or recovery cylinder pressure, the recovery process shall be stopped and an initial weight shall be taken of the mixing chamber (see 9.2). The recovery process shall be continued for a period of time sufficient to achieve the accuracy in 9.4. The recovery process shall be stopped and a final weight shall be taken of the mixing chamber.

BILLING CODE 6560-50-P

Configuration of standard air conditioning or refrigeration system for use as a test apparatus

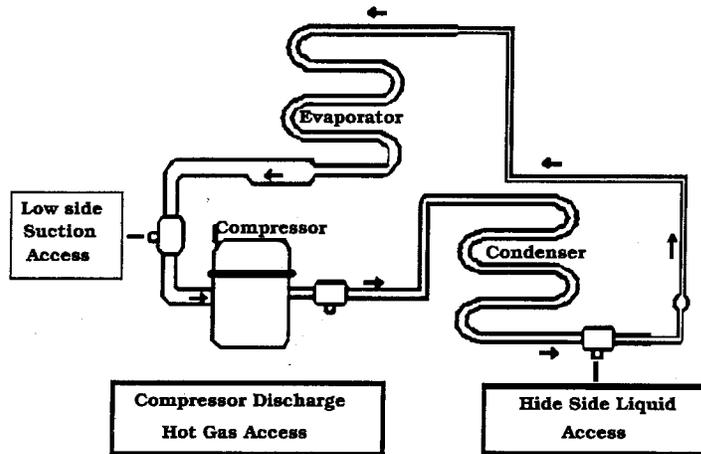


Figure 2. System Dependent Equipment Test Apparatus

7.4.1.2 Vapor Refrigerant Recovery Rate. If elected, the average vapor flow rate shall be measured to accuracy requirements in clause 9.4 under conditions with no liquid refrigerant in the mixing chamber. The liquid recovery feed means shall be used. At initial conditions of saturated vapor at the higher of 24°C or the boiling temperature (100 kPa absolute pressure), the weight of the mixing chamber and the pressure shall be recorded. At final conditions representing pressure in the mixing chamber of 10% of the initial condition, but not less than the final recovery vacuum (see 9.6) nor more than 100 kPa, measure the weight of the mixing chamber and the elapsed time.

7.4.1.3 High Temperature Vapor Recovery Rate. Applicable for equipment having at least one designated refrigerant (see 11.2) with a boiling point between -50°C and +10°C. Measure the rate for R-22, or the refrigerant with the lowest boiling point if R-22 is not a designated refrigerant. Repeat the test in 7.4.1.2 at saturated conditions at 40°C and continue to operate equipment to assure it will achieve the final recovery vacuum (see 7.4.3).

7.4.2 Recovery Operation. This test is for determining the final recovery vacuum and the ability to remove contaminants as appropriate. If equipment is rated for liquid recovery (see 7.4.1.3), liquid recovery feed means described in 6.2.5 shall be used. If not, vapor recovery means described in 6.2.3 or 6.2.4 shall be used. Continue recovery operation until all liquid is removed from the test apparatus and vapor is removed to the point where equipment shuts down by automatic means or is manually shut off per operating instructions.

7.4.2.1 Oil Draining. Capture oil from the equipment at intervals as required in the instructions. Record the weight of the container. Completely remove refrigerant from oil by evacuation or other appropriate means. The weight difference shall be used in 9.5.2.

7.4.3 Final Recovery Vacuum. At the end of the first test batch for each refrigerant, the liquid valve and vapor valve of the apparatus shall be closed. After waiting 1 minute, the mixing chamber pressure shall be recorded (see 9.6).

7.4.4 Residual Refrigerant. This test will measure the mass of remaining refrigerant in the equipment after clearing and therefore the potential for mixing refrigerants (see 4.6).

7.4.4.1 Initial Conditions. At the end of the last test for each batch for each refrigerant, the equipment shall be disconnected from the test apparatus (Figure 1). Recycle per 7.5, if appropriate. Perform refrigerant clearing operations as called for in the instruction manual. Capture and record the weight of any refrigerant which would have been emitted to the atmosphere during the clearing process for use in 9.5. If two loops are used for recycling, trapped refrigerant shall be measured for both.

7.4.4.2 Residual Trapped Refrigerant. Evacuate an empty test cylinder to 1.0 kPa absolute. Record the empty weight of the test cylinder. Open all valves to the equipment so as to provide access to all trapped refrigerant. Connect the equipment to the test cylinder and operate valves to recover the residual

refrigerant. Record the weight of the test cylinder using a recovery cylinder pressure no less than specified in 6.2.2. Place the test cylinder in liquid nitrogen for a period of 30 minutes or until a vacuum of 1000 microns is reached, whichever occurs first.

7.5 Recycling Tests (Recovery/Recycle Equipment).

7.5.1 Recycling Operation. As each recovery cylinder is filled in 7.4.2, recycle according to operating instructions. There will not necessarily be a separate recycling sequence. Note non-condensable purge measurement in 9.5.

7.5.1.1 Recycle Flow Rate. While recycling the first recovery cylinder for each refrigerant, determine the recycling flow rate by appropriate means (see 9.3) to achieve the accuracy required in 9.4.

7.5.2 Non-Condensable Sample. After completing 7.4.3, prepare a second test batch (7.3). Recover per 7.4.2 until the current recovery cylinder is filled to 80% level by volume. Recycle per 7.5.1. Mark this cylinder and set aside for taking the vapor sample. For equipment having both an internal tank of at least 3 kg refrigerant capacity and an external recovery cylinder, two recovery cylinders shall be marked and set aside. The first is the cylinder described above. The second cylinder is the final recovery cylinder after filling it to 80% level by volume and recycling.

7.5.3 Liquid Sample for Analysis. Repeat steps 7.3, 7.4.2 and 7.5.1 with further test batches until indication means in 4.2 show the filter/drier(s) need replacing.

7.5.3.1 Multiple Pass. For equipment with a separate recycling circuit (multiple pass), set aside the current cylinder and draw the liquid sample (see 7.4) from the previous cylinder.

7.5.3.2 Single Pass. For equipment with the single pass recycling circuit, draw the liquid sample (see 7.4) from the current cylinder.

7.6 Measuring Refrigerant Loss. Refrigerant loss due to non-condensables shall be determined by appropriate means (see 9.5.1). The loss could occur in 7.4.1, 7.4.2 and 7.5.1.

Section 8. Sampling and Chemical Analysis Methods

8.1 Chemical Analysis. Chemical analysis methods shall be specified in appropriate standards such as ARI 700-95 and Appendix C to ARI Standard 700-95.

8.2 Refrigerant Sampling.

8.2.1 Water Content. The water content in refrigerant shall be measured by the Karl Fischer Analytical Method or by the Karl Fischer Coulometric techniques. Report the moisture level in parts per million by weight.

8.2.2 Chloride Ions. Chloride ions shall be measured by turbidity tests. At this time, quantitative results have not been defined. Report chloride content as "pass" or "fail." In the future, when quantitative results are possible, report chloride content as parts per million by weight.

8.2.3 Acidity. The acidity test uses the titration principle. Report the acidity in parts per million by weight (mg KOH/kg) of sample.

8.2.4 High Boiling Residue. High boiling residues shall use measurement of the

volume of residue after evaporating a standard volume of refrigerant. Using weight measurement and converting to volumetric units is acceptable. Report high boiling residues as percent by volume.

8.2.5 Particulates/Solids. The particulates/solids measurement employs visual examination. Report results as "pass" or "fail."

8.2.6 Non-condensables. The level of contamination by non-condensable gases in the base refrigerant being recycled shall be determined by gas chromatography. Report results as percent by volume.

Section 9. Performance Calculation and Rating

9.1 Vapor Refrigerant Recovery Rate. This rate shall be measured by weight change of the mixing chamber divided by elapsed time (see 7.4.1.2). The units shall be kg/min and the accuracy shall be per 9.4.

9.1.1 High Temperature Vapor Recovery Rate.

9.2 Liquid Refrigerant Recovery Rate. This rate shall be measured by weight change of the mixing chamber divided by elapsed time (see 7.4.1.3). The units shall be kg/min and the accuracy shall be per 9.4.

9.3 Recycle Flow Rate. The recycle flow rate shall be as defined in 3.10, expressed in kg/min, and the accuracy shall be per 9.4.

9.3.1 For equipment using multi-pass recycling or a separate sequence, the recycle rate shall be determined by dividing the net weight W of the refrigerant to be recycled by the actual time T required to recycle. Any set-up or operator interruptions shall not be included in the time T.

9.3.2 If no separate recycling sequence is used, the recycle rate shall be the higher of the vapor refrigerant recovery rate or the liquid refrigerant recovery rate. The recycle rate shall match a process which leads to contaminant levels in 9.9. Specifically, a recovery rate determined from bypassing a contaminant removal device cannot be used as a recycle rate when the contaminant levels in 9.9 are determined by passing the refrigerant through the contaminant removal device.

9.4 Accuracy of Flow Rates. The accuracy of test measurements in 9.1, 9.2 and 9.3 shall be ± 008 kg/min or flow rates up to .42 kg/min and $\pm 2.0\%$ for flow rates larger than .42 kg/min. Ratings shall be expressed to the nearest .02 kg/min.

9.5 Refrigerant Loss. This calculation will be based upon the net loss of refrigerant which would have been eliminated in the non-condensable purge process (see 7.5.1), the oil draining process (see 7.4.2.1) and the refrigerant clearing process (see 7.4.4.1), all divided by the net refrigerant content of the test batches. The refrigerant loss shall not exceed 3% by weight.

9.5.1 Non-Condensable Purge. Evacuate an empty container to 2 kPa absolute. Record the empty weight of the container. Place the container in a dry ice bath. Connect the equipment purge connection to the container and operate purge according to operating instructions so as to capture the non-condensables and lost refrigerant. Weigh the cylinder after the recycling is complete. Equivalent means are permissible.

9.5.2 *Oil Draining.* Refrigerant removed from the oil after draining shall be collected and measured in accordance with 7.4.2.1.

9.5.3 *Clearing Unit.* Refrigerant captured during the clearing process shall be measured in accordance with 7.4.4.1.

9.6 *Final Recovery Vacuum.* The final recovery vacuum shall be the mixing chamber pressure in 7.4.3 expressed in kPa. The accuracy of the measurement shall be within 0.33 kPa.

9.7 *Residual Trapped Refrigerant.* The amount of residual trapped refrigerant shall be the final weight minus the initial weight of the test cylinder in 7.4.4.2, expressed in kg. The accuracy shall be ±0.02 kg and reported to the nearest 0.05 kg.

9.8 *Quantity Recycled.* The amount of refrigerant processed before changing filters (see 7.5.3) shall be expressed in kg to an accuracy of ±1%.

9.9 *Contaminant Levels.* The contaminant levels remaining after testing shall be published as follows:

Moisture content, ppm by weight
Chloride ions, pass/fail
Acidity, ppm by weight
High boiling residue, % (by volume)
Particulates-solid, pass/fail (visual examination)

Non-condensables, % (by volume)
9.10 *Minimum Data Requirements for Published Ratings.* Published ratings shall include all of the parameters as shown in Tables 2 and 3 for each refrigerant designated by the manufacturer.

Section 10. Tolerances

10.1 *Tolerances.* Performance related parameters shall not be less favorable than the published ratings.

Section 11. Marking and Nameplate Data

11.1 *Marking and Nameplate Data.* The nameplate shall display the manufacturer's name, model designation, type of equipment, designated refrigerants, capacities and electrical characteristics where applicable.

The nameplate shall also conform to the labeling requirements established for certified recycling and recovery equipment established at 40 CFR 82.158(h).

Recommended nameplate voltages for 60 Hertz systems shall include one or more of the utilization voltages shown in Table 1 of ARI Standard 110-90. Recommended nameplate voltages for 50 Hertz systems shall include one or more of the utilization voltages shown in Table 1 of IEC Standard Publication 38, IEC Standard Voltages.

11.2 *Data for Designated Refrigerants.* For each refrigerant designated, the manufacturer shall include all the following that are applicable per Table 2:

- a. Liquid Recovery Rate
- b. Vapor Recovery Rate
- c. High Temperature Vapor Recovery Rate
- d. Final Recovery Vacuum
- e. Recycle Flow Rate
- f. Residual Trapped Refrigerant
- g. Quantity Recycled

TABLE 2.—PERFORMANCE

| Parameter/Type of equipment | Recovery | Recovery/ Recycle | Recycle | System dependent equipment |
|--|----------|-------------------|---------|----------------------------|
| Liquid Refrigerant Recovery Rate | (1) | (1) | N/A | N/A |
| Vapor Refrigerant Recovery Rate | (1) | (1) | N/A | N/A |
| High Temp. Vapor Recovery Rate | (1) | (1) | N/A | N/A |
| Final Recovery Vacuum | (x) | (x) | N/A | (x) |
| Recycle Flow Rate | N/A | (x) | (x) | N/A |
| Refrigerant Loss | (3) | (x) | (x) | (3) |
| Residual Trapped Refrigerant | (2) | (2) | (2) | (2) |
| Quantity Recycled | N/A | (x) | (x) | N/A |

x Mandatory rating.

¹ For a recovery or recovery/recycle unit, one must rate either liquid refrigerant recovery rate or vapor refrigerant recovery rate or one can rate for both. If rating only the one, the other shall be indicated by N/A, "not applicable."

² Mandatory rating for equipment tested for multiple refrigerants.

³ Mandatory rating if multiple refrigerants, oil separation or non-condensable purge are rated.

NOTE: For recovery equipment, these parameters are optional. If not rated use N/A, "not applicable."

TABLE 3.—CONTAMINANTS

| Contaminant/Type of equipment | Recovery | Recovery/ Recycle | Recycle | System dependent equipment |
|-------------------------------|----------|-------------------|---------|----------------------------|
| Moisture Content | (*) | (x) | (x) | N/A |
| Chloride Ions | (*) | (x) | (x) | N/A |
| Acidity | (*) | (x) | (x) | N/A |
| High Boiling Residue | (*) | (x) | (x) | N/A |
| Particulates | (*) | (x) | (x) | N/A |
| Non-Condensables | (*) | (x) | (x) | N/A |

* For recovery equipment, these parameters are optional. If not rated, use N/A, "not applicable."

x Mandatory rating.