DCN FLEP-00002
COMMENTER Ward Paper Company
SUBJECT REC
COMMENT With respect to the disposal of fluorescent lamps, I would encourage the EPA to pursue its proposal to declassify fluorescent light bulbs as a hazardous waste, provided said bulbs are disposed of at a composite lined landfill meeting the latest solid waste requirements, or by recycling the bulbs at a permitted facility. Fluorescent bulb management by the regulated community would be greatly simplified.
RESPONSE
Although EPA has determined that spent hazardous waste lamps can safely be subject to management requirements that are less stringent than those of full Subtitle C, the Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. It is clear to the Agency that mercury poses an environmental threat and that man-made sources of mercury emissions should be reduced, or, where inevitable, managed properly. EPA therefore gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. The Agency is convinced that the universal waste approach is the best way to further these goals. EPA agrees with those commenters to the proposed rule who stated that the conditional exclusion approach would reduce the quantities of spent hazardous waste lamps that would be recycled, increase disposal of lamps in municipal landfills, and increase the amount of mercury released to the environment due to increased breakage of lamps during storage, transport, and landfilling. The Agency=s analysis predicts that uncontrolled mercury emissions under the conditional exclusion approach are likely to be somewhat greater than under the universal waste approach promulgated in today=s rule.

A principal reason for this conclusion is that some substantive and relatively detailed controls for managing spent hazardous waste lamps are necessary for protection of human health and the environment, although these controls can be structured in a much more simplified and streamlined way than the full Subtitle C management system. The Agency believes that such controls would be difficult to implement and to enforce using a conditional exclusion approach. Such an approach could be appropriate if the regulated universe was less numerous and varied, or more sophisticated about Subtitle C requirements. However, since handlers of spent hazardous waste lamps are widely varied, diffuse, and often not knowledgeable about RCRA regulations, it would be very difficult to monitor compliance and enforce controls such as those included in today=s rule if these handlers were completely outside of the Subtitle C universe and the controls were implemented only as conditions for maintaining the exclusion. The Agency believes that the packaging standards and prohibition on treatment included in today=s rule are important for preventing potential mercury emissions during storage and transport. Controls of this type can best be implemented through a universal waste-type approach where handlers are operating within a simple, streamlined management system with some limited oversight rather than completely

outside of any regulatory structure.

A further reason for today=s rule finalizing the universal waste approach is that his approach will provide more consistency between federal and state regulations governing the management of spent hazardous waste lamps. Currently, several states have added hazardous waste lamps to their universal waste programs and others have proposed to do so in the near future. By placing hazardous waste lamps within the federal universal waste rule, EPA hopes to encourage additional states to regulate spent lamps as universal waste and therefore promote greater consistency in regulatory approaches across state borders. This will improve waste management efficiency and reduce compliance costs for waste handlers engaged in interstate commerce.

DCN FLEP-00003
COMMENTER Duke Power Company
SUBJECT REC
COMMENT One option in the Proposed Rule that should be part of whatever EPA proposes is recycling. The recycling option should be accompanied by an exemption for recycled/reclaimed lighting waste regardless of what is decided on the MSW landfill disposal issue.
RESPONSE
Although EPA has determined that spent hazardous waste lamps can safely be subject to management requirements that are less stringent than those of full Subtitle C, the Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. It is clear to the Agency that mercury poses an environmental threat and that man-made sources of mercury emissions should be reduced, or, where inevitable, managed properly. EPA therefore gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. The Agency is convinced that the universal waste approach is the best way to further these goals. EPA agrees with those commenters to the proposed rule who stated that the conditional exclusion approach would reduce the quantities of spent hazardous waste lamps that would be recycled, increase disposal of lamps in municipal landfills, and increase the amount of mercury released to the environment due to increased breakage of lamps during storage, transport, and landfilling. The Agency=s analysis predicts that uncontrolled mercury emissions under the conditional exclusion approach are likely to be somewhat greater than under the universal waste approach promulgated in today=s rule.

A principal reason for this conclusion is that some substantive and relatively detailed controls for managing spent hazardous waste lamps are necessary for protection of human health and the environment, although these controls can be structured in a much more simplified and streamlined way than the full Subtitle C management system. The Agency believes that such controls would be difficult to implement and to enforce using a conditional exclusion approach. Such an approach could be appropriate if the regulated universe was less numerous and varied, or more

sophisticated about Subtitle C requirements. However, since handlers of spent hazardous waste lamps are widely varied, diffuse, and often not knowledgeable about RCRA regulations, it would be very difficult to monitor compliance and enforce controls such as those included in today=s rule if these handlers were completely outside of the Subtitle C universe and the controls were implemented only as conditions for maintaining the exclusion. The Agency believes that the packaging standards and prohibition on treatment included in today=s rule are important for preventing potential mercury emissions during storage and transport. Controls of this type can best be implemented through a universal waste-type approach where handlers are operating within a simple, streamlined management system with some limited oversight rather than completely outside of any regulatory structure.

A further reason for today=s rule finalizing the universal waste approach is that his approach will provide more consistency between federal and state regulations governing the management of spent hazardous waste lamps. Currently, several states have added hazardous waste lamps to their universal waste programs and others have proposed to do so in the near future. By placing hazardous waste lamps within the federal universal waste rule, EPA hopes to encourage additional states to regulate spent lamps as universal waste and therefore promote greater consistency in regulatory approaches across state borders. This will improve waste management efficiency and reduce compliance costs for waste handlers engaged in interstate commerce.

DCN FLEP-00009
COMMENTER Repap Wisconsin, Inc.
SUBJECT REC
COMMENT We have already taken steps to have our spent bulbs taken to a recycling facility and strongly believe that recycling of all raw materials is a worthy goal for the U.S. We currently are complying with the President's guidelines on recycled content of paper in our products.
RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00022
COMMENTER Cooper Industries
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, it has been our experience that there are too few recycling facilities in operation currently to make the Universal waste approach feasible nationwide. Cooper has been able to locate only two recycling facilities in the United States that meet our standards for handling lighting waste. In our view, the EPA's regulation of lamp disposal should assure

that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00022
COMMENTER Cooper Industries
SUBJECT REC
COMMENT Cooper Industries supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream reuse processes involving heat, which would cause any mercury entrained in the materials to be released.

RESPONSE

The Agency notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous

waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00023
COMMENTER Kmart Corporation
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a commendable goal, it has been Kmart Corporation's experience that there are too few recycling facilities in operation currently to make the universal waste approach feasible nationwide. Further, most of the mercury lamp recycling facilities exist in the few states which have promulgated mercury-containing lamp recycling regulations. Consequently, Kmart Corporation recommends that EPA's regulation of lamp disposal should provide safe and cost-effective spent lamp disposal options, at least until a national recycling infrastructure is in place. Kmart Corporation supports environmentally sound and cost-effective recycling, of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurances that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in the materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream rouse processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable

to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00025
COMMENTER Environmental Energy Group/NAEP
SUBJECT REC
COMMENT Lamp recycling services would be expected to rapidly expand (regionally) under the proposed Option 2 which could diminish the need for consolidation points and favor the agency assumptions on direct generator to destination facility shipment assumptions. Hopefully the agency would address this in the preamble of a final rule selecting Option 2.
RESPONSE
The final universal waste rule and today=s rule does not define consolidation points as a separate handler of universal wastes. The universal waste rule defines and provides management standards for four categories of participants: small quantity handlers of universal waste (those handlers who accumulate 5,000 kg or less of universal waste at any one time), large quantity generators of universal waste (those handlers that accumulate more than 5,000 kg of universal waste at any one time), universal waste transporters, and destination facilities. Handlers that generate hazardous waste lamps and self-transport the lamps to a destination facility are subject to the universal waste handler standards as well as the universal waste transporter standards. Similarly, destination facilities that transport hazardous waste lamps are subject to both the destination facility standards and the standards for universal waste transporters.

EPA believes that today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Although generators have several options with regard to waste management (including sending hazardous waste lamps directly to a recycler) the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00026
COMMENTER Thomas Industries, Inc.
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, it has been our experience that there are too few recycling facilities in operation currently to make the Universal waste approach feasible nationwide. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00026
COMMENTER Thomas Industries, Inc.
SUBJECT REC
COMMENT Recycling. Thomas Industries supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to

hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00032
COMMENTER Niagara Mohawk
SUBJECT REC
COMMENT 13. While NMPC believes that the recycling of spent lamps is the preferred alternative in some cases, EPA must understand that recycling is not the solution for the management of all spent lamps. First, recyclers cannot accommodate the huge volumes of lamps that would be generated by full participation in relamping programs (supplement as necessary with company specific data and experience). Second, all recycling facilities are not as environmentally protective as the management of spent lamps in qualified MSWLFs, especially landfills operating under EPA's new MSWLF standards (which are equipped with liners and leachate collection systems.) Indeed, in many cases the management of spent lamps in a qualified MSWLF is more protective of human health and the environment than sending the lamps to a recycling facility where it is unclear (1) how much of the mercury is actually being recovered and by what means such recovery is conducted, and (2) how the treatment residuals (the glass and metal parts) are being reused.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00039
COMMENTER Spectrum Technologists
SUBJECT REC
COMMENT As shown by the enclosed newspaper article, mercury waste becomes available sometimes in very large quantities that can be efficiently handled. In this case Kansas City Power and Light Co. followed standard RCRA procedure in a very responsible way. A landfill exemption would eliminate the chance to recover large amounts of mercury for (hopefully, see below) permanent stabilization. Recycling mercury. Mercury is one of the few cases where recycling may not be the best course of action in the long run. Over the past five years mercury has gone from a valuable commodity to a hazardous waste liability. The only remaining market of any size is gold mining in Brazil where mercury is being emitted en mass to the atmosphere. There's a huge supply overhang comprised of the U.S. strategic stock pile and mercury cell chlorine manufacturing plants that will be coming off line in the next decade or so. EPA needs to develop a

system for the collection of mercury bearing materials and a process to stabilize these materials as compounds of sulfur or selenium. The enclosed abstract from the recent international mercury conference shows that the Swedish EPA has come to this same conclusion.

RESPONSE

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Today=s rule does not mandate the recycling of hazardous waste lamps. Instead, generators have several options with regard to waste management. However, EPA believes that the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste. Generators may also send hazardous waste lamps to hazardous waste treatment and disposal facilities, which are subject to full regulation under Subtitle C. The hazardous waste regulations require that hazardous waste be properly treated (e.g., stabilization) prior to disposal in a hazardous waste landfill.

DCN FLEP-00042

COMMENTER Entergy Services, Inc.

SUBJECT REC

COMMENT Lamp Recycling. Entergy further believes that recycling spent lamps may not always be the preferred management method. First, the limited number of competent recyclers cannot currently accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Second, not all recycle facilities are as environmentally conscious or protective in the management of spent lamps as qualified MSWLFs, especially landfills operated under EPA' s new MSWLF standards (equipped with liners and leachate collection systems). In many cases, the management of spent lamps in a MSWLF is more protective of human health and the environment than sending the lamps to a recycle facility where it is unclear (1) how much of the mercury is actually being recovered and by what means such recovery is conducted, and (2) how the treatment residuals (e.g., the glass and metal parts) are being reused and/or disposed.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle

C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00051
COMMENTER Scientific Consulting Laboratories, Inc.
SUBJECT REC
COMMENT In addition the recycling industry entrepreneurs will be less
inclined to invest in innovative resource recovery technology.
The U.S. must move from land disposal to reuse and recovery.
RESPONSE
Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Although generators have several options with regard to waste management, EPA believes that the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00059
COMMENTER Connecticut Dept. of Env. Protection
SUBJECT REC

COMMENT a) Viable recycling technology and markets exist, and in fact are expanding, and this should be encouraged. Some states in fact are mandating the recycling of waste lamps. Allowing landfill disposal would undoubtedly remove economic incentives to recycle.

RESPONSE

The Agency agrees with these comments.

DCN FLEP-00063

COMMENTER American Waste Management, Inc.

SUBJECT REC

COMMENT American Waste Management, Inc., (AWM), is developing a spent fluorescent lamp recycling facility. This facility will be located in the Pittsburgh area of southwestern Pennsylvania. This facility will have a maximum annual processing capacity of approximately 2,190,000 four foot fluorescent lamps. Contingent upon the financial success of this first fluorescent lamp recycling operating unit, AWM has entered into an agreement with an equipment manufacturer to develop four more lamp recycling facilities in major metropolitan areas. These four new recycling facilities will have identical maximum production capacities to the southwestern Pa. recycling unit. At maximum capacity the southwestern Pa. recycling facility would recover between 43.8-131.4 kg of elemental mercury annually, which otherwise have contaminated the nation's land, water, and air.

RESPONSE

The Agency appreciates the information submitted by the commenter. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The Agency believes that less complex regulations will increase the collection of universal wastes, and the ability to access large quantities of universal waste from central collection centers could encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00072

COMMENTER Georgia Hall

SUBJECT REC

COMMENT Recycling allows us to reuse everything that the bulbs are made of and saves energy because we do not need to produce all of the raw materials from the natural sources. We can save our natural resources, environment, and our children by keeping the poison of mercury and lead out of our landfills and recycle as we do the lead acid batteries.

RESPONSE
The Agency appreciates the views expressed by the commenter. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps.

DCN FLEP-00074
COMMENTER Dextrite, Inc.
SUBJECT REC
COMMENT Over the years the Dextrite disposers have been successfully tested by our customers for acceptable levels of mercury vapor emissions, not only in filtering toxic vapors but also in controlling the release of these vapors into the atmosphere during drum change. The concern of large lamp users disposing of thousands of lamps economically is beyond comprehension with new EPA regulations appearing on the horizon. In my opinion the Dextrite disposers can offer a safe and economical means of compacting spent lamps for transport lamp recycling facilities.
RESPONSE
Today's final rule adds hazardous waste lamps to the scope of the universal waste rule, 40 CFR Part 273. The universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Some commenters to the proposed spent mercury-containing lamps rule requested that the Agency allow generators of such lamps to crush them on-site before sending them off-site for treatment or disposal. However, as explained in the preamble to the final universal waste rule (60 **FR** 25519), the Agency believes that it is not appropriate to allow universal waste handlers to treat universal wastes because the handlers are not required to comply with the Subtitle C hazardous waste management standards for generators (40 CFR Part 262). These hazardous waste generators must obtain EPA identification numbers, are subject to the 90-day (or 180-day) accumulation limit, and must comply with the technical standards of 40 CFR Part 265 for storage and accumulation units. Because these standards are relatively stringent, EPA=s policy is that generators may treat hazardous wastes on-site, provided that they comply with all applicable requirements of 40 CFR Part 262 for storage and accumulation of hazardous wastes.

Universal waste handlers, on the other hand, are allowed a much longer accumulation time limit of one year and need not comply with specific technical standards for accumulation and storage units. Instead, they are subject only to the general performance standard of managing universal wastes in a manner Athat prevents releases@ to the environment. In addition, information available to the Agency on drum top crushing systems for lamps indicates that these units may allow significant air emissions of mercury, particularly when the units are not in operation, and emissions often may exceed the OSHA limit of 0.05 $mg/m^3$.

For these reasons, the Agency is not allowing crushing of hazardous waste lamps under federal regulations. However, generators located in a state with an authorized universal waste program may be allowed to crush, universal waste lamps, if within the state authorization process the Agency determines that a state=s program allowing generators to treat lamps under controlled or restricted conditions is equivalent (per RCRA '3006) to the federal prohibition. EPA believes that this approach both ensures protection of human health and the environment while allowing for the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

DCN FLEP-00076
COMMENTER The Southland Corporation
SUBJECT REC
COMMENT Recycling. The Southland Corporation supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream managements and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the "OSHA" workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN SCSP-00077
COMMENTER U.S. Department of Energy
SUBJECT REC
COMMENT (4) If viable recycling technologies are available for the hazardous waste, a special collection system would facilitate recycling; Viable recycling technologies are currently available for fluorescent lamp recycling. According to an article published in The Wall Street Journal on August 31, 1992 [2] [Footnote 2: "Regulations on Fluorescent Lamp Kindle New Industry," The Wall Street Journal, August 31, 1992, Page B2.]:"...only four recycling plants are operating in the U.S. - three in California and one in Minnesota. But the prospect of similar rules in other states, plus a tougher stance by the federal Environmental Protection Agency, has kindled a new, entrepreneur-based mercury recycling industry in scattered locations across the U.S." Development of recycling operations would promote resource recovery. Such development would require a large amount of time and capital. However, EPA has stated in its proposed regulations: "EPA would still consider a petitioner's request even if no recycling technology exists for a particular waste and no technology is under development." [58 FR 8112].
RESPONSE
EPA appreciates the views expressed by the commenter. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Generators have several options with regard to waste management, but the ability to

access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00078
COMMENTER Tennessee Valley Authority
SUBJECT REC
COMMENT We have visited several lamp recyclers and are concerned that there may be adverse environmental impacts from recycling at some recyclers. Inability of some recyclers to fully separate out lamp components could leave residual mercury and other metals with recycled byproducts that are exposed to the environment.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00081
COMMENTER Family Dollar Stores, Inc.
SUBJECT REC
COMMENT Family Dollar Stores, Inc. supports environmentally, sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury, be applied. We also believe that the levels of mercury

allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00082

COMMENTER Square D Company

SUBJECT REC

COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, it has been our experience that there are too few recycling facilities in operation to make the universal Waste approach feasible nationwide. We have only identified two, and after review and inspection, only one is met our strict internal approval process. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00082
COMMENTER Square D Company
SUBJECT REC
COMMENT Comments on Recycling. Square D Company supports environmentally sound and cost-effective recycling of mercury- containing lamps. Currently several manufacturing locations are using a company in Michigan to accomplish this recycling. Due to the long term liability associated with any wastestream that is generated, we strongly encourage controls on the recycling process. We suggest that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied to the process. We also suggest that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released into the environment.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00084
COMMENTER Jeff Carmichael
SUBJECT REC
COMMENT This proposed rule does not discuss the permitting requirements to be imposed on lamp reclamation facilities. Hopefully, the permitting requirements will provide adequate protection to human health and the environment without imposing all of the Subtitle C permitting requirements.
RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00086
COMMENTER Northeast Utilities Service Co.
SUBJECT REC
COMMENT 4) Recycling capacity may be inadequate nationally.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00086
COMMENTER Northeast Utilities Service Co.
SUBJECT REC
COMMENT IV. Recyclers of Lighting Wastes May Not Have Adequate Capacity

> Based on current information, it is uncertain whether recyclers can accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Further, management of spent lamps at some recycling facilities may not be as environmentally protective as the management of spent lamps in qualified MSWLFs. Indeed, it is unclear how much of the mercury is actually recovered at recycling facilities.

RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous

waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00133
COMMENTER Robroy Industries
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, we are aware that there does not exist sufficient recycling capacity at present. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.

RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00134
COMMENTER Aetna Life and Casualty Company
SUBJECT REC
COMMENT Permitted, Licensed, or Registered Recyclers. Aetna is concerned that the proposed regulation does not offer acceptable recycler standards. As shown in previous USEPA reports [Footnote 2: See, for example, Truesdale, Robert S.. et al.. "Management of Used Fluorescent Lamps: Preliminary Risk Assessment," RTI Project No.. 94U-5400-010, pp. 148-154, Oct. 1992.] , detrimental effects associated with past mercury-containing lighting reclamation has occurred. Aetna believes it is prudent for the USEPA to define acceptable recycling standards thus ensuring that fluorescent tube collection and treatment does not lead to a greater environmental problem by concentrating mercury contamination in one location. Furthermore, USEPA is relying on State oversight of these operations. It is unknown at this time what oversight the States can provide without adequate guidance. Aetna urges the USEPA to consider developing guidance for the States.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used

in a manner constituting disposal.

DCN FLEP-00136
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT REC
COMMENT In Wisconsin, after we prepared and distributed guidance that encourages the recycling of lighting wastes, the private sector responded and created a very fine lighting waste recycling infrastructure in a matter of months. One of these new companies received the Governor's Recycling Award in 1993, for the new services and environmental protection that they offer. However, lamp recycling is necessary to be certain that mercury-containing lamps are properly recycled. The USEPA should develop best management practices (BMPs) for generators and recyclers, to minimize "fly by night" operations.

In short, because of Wisconsin's special environment, we strongly support the capture and recycling of mercury, to minimize the possible emissions to our Great Lakes and inland waters.

From an environmental perspective, we believe that the environmental benefits of recycling are significantly greater if mercury-containing lamps are recycled, rather than disposed in Subtitle D or Subtitle C landfills. It is the position of the WDNR that environmental mercury emissions that can be controlled should be controlled. Aside from the environmental issues previously raised concerning the environmental costs to mine, transport and refine mercury-bearing ores, we believe that there are significant environmental costs associated with the disposal of mercury in landfills. Mercury in the environment is a major issue for the Great Lakes states and the more efforts that we can take to reduce mercury in the environment, the healthier this treasured resource will be.
RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00138
COMMENTER Indiana Michigan Power Company
SUBJECT REC
COMMENT While I&M believes that the recycling of spent lamps is the preferred alternative, USEPA must understand that recycling is

not the solution for the management of all spent lamps. First, recyclers cannot accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Second, all recycling facilities are not as environmentally protective as the management of spent lamps in qualified MSWLFs, especially landfills operating under USEPA's new MSWLF standards (which are equipped with liners and leachate collection systems). Indeed, in many cases the management of spent lamps in a qualified MSWLF is more protective of human health and the environment than sending the lamps to a recycling facility where it is unclear (1) how much of the mercury is actually being recovered and by what means such recovery is conducted, and (2) how the treatment residuals (e.g., the glass and metal parts) are being reused.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill

leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00143
COMMENTER A-TEC Energy Corporation
SUBJECT REC
COMMENT The availability of lamp recycling is constantly growing. A-TEC Recycling, Inc. currently serves the State of Iowa and surrounding Midwestern States. A-TEC Recycling, Inc. is planning to locate facilities in the Kansas City and St. Louis, Missouri areas in 1995 and is considering further expansion into the Oklahoma City, Oklahoma and Denver, Colorado areas. A-TEC Recycling, Inc. is associated with USA Lights which has placed over a dozen lamp recycling machines around the United States.
RESPONSE
The Agency appreciates the information on recycling capacity submitted by the commenter.

DCN FLEP-00144
COMMENTER National Rural Electric Cooperative Assn
SUBJECT REC
COMMENT While NRECA believes that the recycling of spent lamps is the preferred alternative in some cases, EPA must understand that recycling is not the solution for the management of all spent lamps. First, recyclers cannot accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Second, all recycling facilities are not as environmentally protective as the management of spent lamps in qualified MSWLFs, especially landfills operating under EPA's new MSWLF standards (which are equipped with liners and leachate collection systems). Indeed, in many cases the management of spent lamps in a qualified MSWLF is more protective of human health and the environment than sending the lamps to a recycling facility where it is unclear (1) how much of the mercury is actually being recovered and by what means such recovery is conducted, and (2) how the treatment residuals (e.g., the glass and metal parts) are being reused.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for

recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00145
COMMENTER ASTSWMO
SUBJECT REC
COMMENT We recommend that USEPA regulate the waste fluorescent lamp recycling facilities by requiring the facilities to meet the category D (commercial off-site facility) requirements which have been proposed in the Definition of Waste Roundtable discussions. Requiring facilities to meet these proposed requirements would help to ensure that waste fluorescent lamps are being managed at safe facilities. Additionally, ASTSWMO believes that USEPA should replace normal hazardous waste permitting requirements for the storage of waste fluorescent lamps at the recycling facilities with the best management

standards discussed in the Definition of Waste Roundtable sessions. By removing a major disincentive to recycling (i.e., permitting), we believe that the development of recycling facilities throughout the nation will be promoted, which will in turn ensure a national capacity for fluorescent lamp recycling.

RESPONSE

Although EPA has not promulgated regulations to implement the recommendations of the Definition of Solid Waste Roundtable, the Agency believes that today=s rule is effective in ensuring that mercury emissions are minimized during all stages of lamp management. Today=s rule includes storage and packaging standards for handlers of hazardous waste lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. The Agency notes that a hazardous waste permit is not required under Subtitle C unless a recycling facility stores the waste before recycling it.

Although, under the universal waste rule, destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, mercury containing lamps can be safely recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process.

The final rule does not affect a facility=s status related to other federal and state statutes and regulations. Lamp recycling facilities and downstream users must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA.

DCN SCSP-00146

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT REC

COMMENT Technology - Many questions have arisen concerning the available technology for the recycling of fluorescent lamps. Prior to the formation of MTI, AERC conducted extensive evaluations of other technologies available from both the United States and Europe. Since the recycling of fluorescent lamps has been conducted in Europe for approximately 10 years, the philosophy and concepts of the technology are well established. The National Electrical Manufacturers Association (NEMA), through their due diligence process, also completed an extensive review of the available

technology. By maintaining an approach into the universal waste system, recyclers of fluorescent lamps will be required to perform to TCLP levels and other facility standard requirements in order to be considered a viable recycling option. AERC supports the concept of establishing additional requirements for recycling facilities to assure environmental compliance and sound business practices. AERC would be willing to work with the USEPA and other agencies in establishing these guidelines. The USEPA must understand that the "high-tech" recycling business is evolving. Every day, new developments occur which improve operations, procedures, and environmental controls. The basic crush, separation, clean, and roast and retort technology is sound. The result is recycled products in the areas of glass, aluminum, phosphor powder, and mercury. AERC's approach to recycling is a total recycling concept which will result in no residual waste from the recycling of fluorescent lamp operations. As discussed with various representatives of the USEPA, the only unanswered question associated with this concept is a practical recycling option for mercury-free phosphor powder. We have a number of options which are currently in the test stages and awaiting results. We are extremely confident that when this process is complete, we will have several viable options for the recycling of the phosphor powder. It must be stated in this section, contrary to any opposing views, that there is viable technology for the effective recycling of fluorescent lamps. Analytical results conducted by independent laboratories for the AERC/MTI equipment are included in the Exhibits. These results clearly prove the viability of this technology as a sound recycling option. In addition, analytical data provided by our viable competitors also proves compliance with all applicable regulations.

Another important environmental consideration in determining the viability of the universal waste regulation is the percentages of recyclable materials within a fluorescent lamp. The approximate breakdown of a fluorescent lamp is as follows: [See hard copy of SCSP-00146 for table.] From our perspective, the percentages of glass and aluminum end caps, combined with the relative hazard associated with the mercury, makes this a very easy decision. They should be recycled whenever possible.

RESPONSE

The Agency appreciates the commenter=s research efforts in innovative lamp recycling

technologies. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps.

DCN FLEP-00148
COMMENTER Total Lighting Maintenance and Electric
SUBJECT REC
COMMENT RECYCLING. TOTAL LIGHTING AGREES RECYCLING IS BOTH A COST-EFFECTIVE AND ENVIRONMENTALLY SOUND PRACTICE. THE LEVELS OF MERCURY ALLOWED IN MATERIALS RECOVERED FROM LAMPS MUST BE LIMITED TO AVOID UNSAFE EXPOSURE IN REUSE PROCESSES INVOLVING HEAT. AS WE ALL KNOW, HEAT COULD CAUSE MERCURY TO BE RELEASED. NOT A GOOD THING TO DO.
RESPONSE
Today=s rule ensures that mercury emissions are minimized during all stages of lamp management. The rule also includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility.

Although, under the universal waste rule, destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, mercury containing lamps can be safely recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process.

Residuals from the lamp recycling process that exhibit a characteristic of hazardous waste per 40 CFR 261 Subpart B must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR 266 Subpart C, standards for recyclable materials used in a manner constituting disposal. In addition, the final rule does not affect a facility=s status related to other federal and state statutes and regulations. Lamp recycling facilities and downstream users must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA.

DCN FLEP-00150
COMMENTER Anchorage Municipal Light and Power
SUBJECT REC
COMMENT With regard to condition 1 of the exclusion, the Municipality of Anchorage owns and operates an MSW landfill through its Solid Waste Services Department. This facility would provide

acceptable disposal for many Alaskan generators. However, the recycling of spent lamps in Alaska will have serious economic and transportation obstacles to overcome, and in the end may not be as protective of health and the environment as direct landfilling in an MSW facility.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00153
COMMENTER Vermont Dept. of Environ. Conservation
SUBJECT REC
COMMENT c. Viable recycling technologies, markets, and regional

processing capacity already exist for mercury-containing lamps. Creation of a least cost/least effort alternative by allowing landfill disposal will remove incentives to recycle and will undermine a growing private sector industry for the processing of many types of mercury-containing wastes.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN SCSP-00154

COMMENTER Lighting Recycling, Inc.

SUBJECT REC

COMMENT With respect to NEMA's other argument - that recycling technology does not get the residue clean enough and that mercury refiners cannot be trusted to safely and reliably clean up the mercury - this can be dealt with through the licensing process, and already is being done so. While mercury refiners, may have had bad environmental records in the past they are now improving under the watchful eye of EPA and state enforcers. And while early recycling technology did indeed leave some residue on the glass and metal (although the overall waste was reduced from over 100 ppm to under 5 ppm in mercury in most cases, the second generation technologies, such as the MRT Crush and Sieve plants from Sweden, typically get mercury levels well below 1-2 ppm in the glass. In any case, the answer is not, as NEMA suggests, to trade away 95%+ mercury recovery from a recycling strategy for 0% recovery and uncertain fate in the landfill, along with releases along the way from careless handling. The answer instead is to encourage and work with recyclers and re-refiners to improve their processes and get even cleaner residues.

RESPONSE

The Agency appreciates the views expressed by this commenter. The Agency thanks the commenter for submitting information on mercury lamp recycling technologies.

DCN FLEP-00156

COMMENTER National Electrical Manufacturers Assn.

SUBJECT REC

COMMENT Of critical importance is the establishment and enforcement of BMPs for recycling. This is a weak point in the current Subtitle C program. The value of the raw materials in the components of an average new four foot fluorescent lamp is no more than $.05, the remainder of the cost of the finished product deriving from labor, overhead, and technology to

manufacture the components, assemble the finished product, and deliver the finished product to the consumer. The value of the materials in a spent lamp on the secondary materials market is approximately $.0l to $.015. Clearly, with prices as low as these, conditions are ripe for sham recycling operations, 'tire piles' of spent lamps, and environmental shortcuts in lamp reclamation processing such as retention of contaminants in recovered secondary materials in order to save processing costs.

While NEMA believes that Subtitle D landfilling of spent lamps in compliance with BMPs is protective, NEMA also supports environmentally sound and cost-effective recycling. NEMA is concerned however that there is currently insufficient quality recycling capacity available to protectively handle the 500 to 600 million spent mercury-containing lamps generated each year. NEMA is also concerned about the safety of some recycling practices and about the presence of residual mercury contamination in the products recovered from the spent lamps, especially in the glass.[12] (Footnote 12: NEMA studies have shown that as much as 3 mg of mercury per lamp could be released if the recovered glass is re-melted, as would occur for certain typical re-use scenarios such as "glassphalt" and fiberglass production. Re-use temperatures as low as 250 degrees C can produce mercury evolution rates as high as 7 mg per kg of glass (See Enclosure 4). NEMA designed the BMPs to address these concerns. However, time is needed to ensure that protective recycling capacity and markets can be developed. Therefore, the option to landfill, a clearly protective option with BMPs, should be preserved.

RESPONSE

Under today-s, destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities.

Although, under the universal waste rule, destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, mercury containing lamps can be safely recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process.

The final rule also does not affect a facility=s status related to other federal and state statutes and regulations. Lamp recycling facilities and downstream users must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA. Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste in accordance with all applicable Subtitle C hazardous waste management standards, including the provisions of 40 CFR 266, Subpart C, standards for recyclable materials used in a manner constituting disposal.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The Agency notes that this rule does not mandate that hazardous waste lamps be recycled. Generators have several options with regard to waste management. However, the Agency believes that ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste. The Agency=s data indicate that there are about 50 lamp recycling facilities in the United States, which are currently operating at approximately 1/3 of design capacity. EPA believes that if demand for recycling continues or increases, investment in recycling facilities will also increase, thus leading to a significant expansion in capacity. As noted in today=s preamble the Agency also remains concerned about potential long-term releases from municipal landfills.

DCN FLEP-00156
COMMENTER National Electrical Manufacturers Assn.
SUBJECT REC
COMMENT The NEMA paper explains that re-use of mercury-contaminated materials reduces product performance and introduces pollution control requirements into manufacturing processes that are not now mercury-contaminated and do not require such controls. Also, materials recovered from spent lamps have undergone degradation due to their use, such that the quality of the newly manufactured product and its ability to meet standards promulgated under the Energy Policy Act of 1992 would be compromised. These technical issues might be able to be resolved with a tremendous expenditure of resources in terms of both research and development and materials processing and purification, both of which would drive the cost of the product up and thereby might reduce its use. Lamp manufacturing is not likely to be a re-use application for materials recovered from spent lamps for the foreseeable future.
RESPONSE
Although EPA does not have jurisdiction under RCRA over manufacturing processes, EPA notes

that reuse of mercury-containing products would have to comply with all applicable Clean Air Act and OSHA regulations. The Agency agrees that research and development into environmental and product performance issues may be desirable, although it has no data which would lead it to conclude that reuse applications for recycled lamps are as limited as the commenter suggests.

DCN SCSP-00159
COMMENTER Robert K. Stockett
SUBJECT REC
COMMENT Comment 4: Recycling Fluorescent Light Bulbs is Consistent With the Goal of Resource Conservation, While Protecting Human Health and the Environment. The SAIC report notes that fluorescent bulbs are made of recyclable and recoverable resources. A number of processes have been developed to recycle glass, end caps, and filaments and for recovering the solid phosphor and mercury powder from fluorescent bulbs. SAIC believes recovering these materials is beneficial in decreasing the cost of hazardous waste management and conserving virgin resources [2] . Recycling used fluorescent bulbs is consistent with the EPA's goal of resource conservation. An informal report from the Illinois Environmental Protection Agency states that recycling fluorescent lamps appears to be the best method for keeping mercury out of the environment [7]. The preliminary risk assessment for the EPA concludes that fluorescent lamp recycling facilities can, occasionally impact ambient air quality, but do not raise concentrations to levels of concern for human health. It estimates the maximum emissions from a plant processing 5 to 7 million bulbs annually should be about an order of magnitude less than a municipal waste combustion facility incinerating over 200 metric tons per day of solid waste. Calculations indicate that recycling used fluorescent bulbs would decrease overall mercury emissions (see attachment 2) [5].

The glass and metal components of fluorescent light bulbs are recyclable. Several U.S. and European companies are interested in expanding the fluorescent bulb recycling business in the United States. Recycling fluorescent light bulbs reduces the quantity of mercury released into the environment compared to disposal in municipal solid waste, thus reducing potential risk to human health and the environment.

RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN SCSP-00159
COMMENTER Robert K. Stockett
SUBJECT REC
COMMENT Several companies are presently engaged in the business of fluorescent bulb recycling. These include: [7] Recyclights (MN) Mercury Technologies International (CA) Advanced Environmental Recycling Corp. (PA) Mercury Technologies of Minnesota (MN) Lighting Resources (CA) Mercury Recovery (CA) Midwest Recycling & Mercury Recovery Services (IA) Nine West Technologies (TN) American Lighting (UT)
RESPONSE
The Agency thanks the commenter for providing information on the identification of lamp recycling businesses.

DCN FLEP-00160
COMMENTER Central and South West Services, Inc.
SUBJECT REC
COMMENT Not only is disposal in MSWLFs fully protective of human health and the environment, but CSW is concerned that there is not adequate, environmentally protective recycling capacity to accommodate the large volumes of lighting wastes that would be generated by full participation in Green Lights and similar programs. For example, as of 1993, there were only three fully operational mercury retorters in the country, only two of which could retort mercury from fluorescent powder. It has been estimated that approximately 90 million fluorescent tubes are removed from service per year in California alone, with many more hundreds of millions of bulbs removed from service per year in the remaining states. In California, reclaimers can each process about 400,000 tubes a month which equates to 5 drums a month of fluorescent powder. Retorters can process about 20 drums per week. Processing takes up to two days. Based on this statistic, California alone could generate enough material to take care of one of the retorter's quotas. Thus, adequate and environmentally sound recycling capacity is clearly an issue of concern for any participant in an energy-efficient relamping program. Indeed, the RTI Report acknowledges that there are currently only a few number of viable recyclers available and not likely an adequate number to accommodate the total number of bulbs removed from service annually. Perhaps of more concern is the fact that certain recycling operations may not be fully adequately protective of human health and the environment.

Indeed, one case study in the RTI Report demonstrates that "mercury recovery facilities can have significant negative environmental impacts through poor operating practices and inadequate emission controls. The concentration of mercury-bearing wastes at such facilities makes adequate oversight of their design and operations a necessity for protection of human health and the environment." RTI Report at 139-140, 176. (Fn. 9 - In one case study cited in the RTI Report, it was "not clear" to EPA where the mercury was ending up in the process. Id. At 139. In another case study, it was found that a retorting operation resulted in "significant mercury contamination in soil, ground water and various biota." Id. at 152. As EPA's own mercury emissions report indicates, emissions from secondary mercury facilities were on par with emissions from broken mercury-containing lamps. See EPA Emissions Report at 3-11, 3-70. Secondary mercury production is estimated to have accounted for approximately 6.7 Mg (7.4 tons) of mercury emissions in 1991 while annual mercury emissions from breakage of lamps is approximately 8 Mg (8.8 tons). Id. This concern over the environmental performance of the less vigilant lighting waste recyclers is especially relevant as more states implement recycling exclusions" from hazardous waste regulation and a plethora of lighting waste facilities spring up across the country. On top of the concerns regarding the environmental performance of certain recyclers, is the performance of the mercury-recovery operations themselves. USWAG members that have evaluated the environmental performance of recycling facilities have raised legitimate questions regarding the "recovery" performance of certain facilities. In fact, one utility reported that as little as 50 percent of the mercury was reclaimed by the recycling facility it employed in Wisconsin. See Comments submitted by Wisconsin Public Service Corp. to RCRA Docket (Sept. 2, 1994). In this particular operation, the recycling operations involved the crushing of the bulbs and the collection of gases and small particles for mercury reclamation. The glass was recycled as scrap glass (apparently as roadbed material). The utility in this case recycled approximately 23.247 lights over a period of 8 months. If each light contained 50 mg of mercury, the total recyclable amount of mercury would have been approximately 2.5 pounds of mercury. In reality, however, as little as 1.25 pounds of mercury was likely recovered based on the facility's TCLP results. Thus, despite a

> $30,000 expenditure for mercury recovery, only about $50 worth of mercury was actually recovered. Id. at 2. Thus, despite the expenditure of a significant amount of time, effort, energy and money, the actual environmental or fiscal benefits of recycling in this case were negligible. (Fn. 10 - USWAG also noted that recyclers have an understandable economic incentive to conditioning any management option on recycling. EPA's cost analysis reveals that the recycling of mercury-containing lamps is significantly more expensive than disposal in MSWLFs. For example, EPA estimates that the average cost for Subtitle D disposal is $35 per ton as compared to $400 per ton for Subtitle C disposal and $1,375 per ton for recycling. 59 Fed. Reg. At 38300, n.4. Similarly, EPA estimates that the average cost for Subtitle D disposal is $35 per ton as compared to $400 per ton for Subtitle C disposal and $1,375 per ton for recycling. 59 Fed. Reg. At 38300, n.4. Similarly, EPA estimates that Subtitle D landfilling costs range between $10 and $150 per ton depending upon the region of the country. As EPA notes, "[c]ompared with an average recycling cost of $1375 per ton, Subtitle D landfilling is significantly less expensive." Id. at 38300 n.5 (emphasis added). Thus, under the conditional exclusion option, reclamation facilities could be impacted by approximately $7 million in lost revenues ($469,00 per facility). Id. At 38300. CSW wishes to emphasize that there are a number of qualified, environmentally sound recycling facilities in existence across the country. However, it is important that EPA (and the states) not be lured into believing that recycling is, at the present time, the panacea for the management of mercury-containing lamps. While recycling is a laudable goal, there is still a need to develop a national recycling infrastructure that is environmentally sound and capable of accommodating the large volumes of lighting wastes from relamping programs. At present, however, both environmentally sound recycling and management in qualified MSWLFs must be preserved as viable options for mercury containing lamps.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle

C landfills.
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00162
COMMENTER Delaware Department of Natural Resources
SUBJECT REC
COMMENT PROMOTING RECYCLING The Pollution Prevention Act of 1990 established precedence for hazardous waste management which ranks recycling as a priority over disposal whenever possible. The Delaware HWMB believes an exclusion of mercury containing lamps would inhibit recycling due to the reduced cost of landfill disposal. Recycling must continue to be promoted and encouraged. The state of Delaware is concerned that an exclusion of mercury containing lamps would undermine current federal and state initiatives.
RESPONSE
The Agency appreciates the views expressed by the commenter.

DCN FLEP-00163
COMMENTER Massachusetts Dept. of Environ. Prot.

SUBJECT REC
COMMENT Although recycling is an option under the Conditional Exclusion proposal, the incentive for generators to recycle would be greatly reduced since the up-front disposal costs of landfilling are generally less. Allowing landfilling may also weaken the incentive for manufacturers to further reduce the toxicity of SFLs. Another reason MA DEP does not support this option is that it was unclear how recycling facilities described in the Conditional Exclusion scenario would be regulated. The state hazardous waste program would have no authority to regulate recyclers since SFLs destined for recycling would be exempt from Subtitle C. Nor would recyclers likely be regulated by the MA DEP solid waste program as it provides exemptions from regulation for certain recycling activities. MA DEP feels that SFL recycling operations need some level of oversight by either the solid or hazardous waste programs, and option 1 does not seem to include such provisions.
RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00164
COMMENTER E.I. Du Pont De Nemours and Co., Inc.
SUBJECT REC
COMMENT DU PONT BELIEVES THE CONDITIONAL EXCLUSION IS MORE LIKELY TO ENCOURAGE RECYCLING OF SPENT LAMPS, ULTIMATELY FREEING UP TREATMENT DISPOSAL CAPACITY FOR MORE DESERVING WasteS. By keeping spent lamps that exhibit the toxicity characteristic (TC) within Subtitle C, DuPont believes that most generators will continue to send their spent lamps to permitted treatment and disposal facilities for stabilization or immobilization prior to land disposal, even if streamlined hazardous waste management requirements are promulgated. The conditional exclusion, however, represents a more rational approach by removing the stigma associated with a hazardous wave classification and provides an opportunity for consistent management of all spent electric lamps. Furthermore, by encouraging recycling outside the hazardous waste management system, Subtitle C treatment and disposal capacity will become available for more deserving wastes.
RESPONSE
Although EPA has determined that spent hazardous waste lamps can safely be subject to management requirements that are less stringent than those of full Subtitle C, the Agency does not

believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. It is clear to the Agency that mercury poses an environmental threat and that man-made sources of mercury emissions should be reduced, or, where inevitable, managed properly. EPA therefore gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. The Agency is convinced that the universal waste approach is the best way to further these goals. EPA agrees with those commenters to the proposed rule who stated that the conditional exclusion approach would reduce the quantities of spent hazardous waste lamps that would be recycled, increase disposal of lamps in municipal landfills, and increase the amount of mercury released to the environment due to increased breakage of lamps during storage, transport, and landfilling. The Agency=s analysis predicts that uncontrolled mercury emissions under the conditional exclusion approach are likely to be somewhat greater than under the universal waste approach promulgated in today=s rule.

A principal reason for this conclusion is that some substantive and relatively detailed controls for managing spent hazardous waste lamps are necessary for protection of human health and the environment, although these controls can be structured in a much more simplified and streamlined way than the full Subtitle C management system. The Agency believes that such controls would be difficult to implement and to enforce using a conditional exclusion approach. Such an approach could be appropriate if the regulated universe was less numerous and varied, or more sophisticated about Subtitle C requirements. However, since handlers of spent hazardous waste lamps are widely varied, diffuse, and often not knowledgeable about RCRA regulations, it would be very difficult to monitor compliance and enforce controls such as those included in today=s rule if these handlers were completely outside of the Subtitle C universe and the controls were implemented only as conditions for maintaining the exclusion. The Agency believes that the packaging standards and prohibition on treatment included in today=s rule are important for preventing potential mercury emissions during storage and transport. Controls of this type can best be implemented through a universal waste-type approach where handlers are operating within a simple, streamlined management system with some limited oversight rather than completely outside of any regulatory structure.

A further reason for today=s rule finalizing the universal waste approach is that his approach will provide more consistency between federal and state regulations governing the management of spent hazardous waste lamps. Currently, several states have added hazardous waste lamps to their universal waste programs and others have proposed to do so in the near future. By placing hazardous waste lamps within the federal universal waste rule, EPA hopes to encourage additional states to regulate spent lamps as universal waste and therefore promote greater consistency in regulatory approaches across state borders. This will improve waste management efficiency and reduce compliance costs for waste handlers engaged in interstate commerce.

DCN FLEP-00165
COMMENTER Ohio Chamber of Commerce

SUBJECT REC
COMMENT Recycling. The Ohio Chamber supports environmentally sound and cost-effective recycling of lamps containing mercury. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in material recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00165
COMMENTER Ohio Chamber of Commerce
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of lamps containing mercury. While this is a laudable goal, it has been the experience of our member companies that there are too few recycling facilities in operation currently to make the universal waste approach feasible nationwide. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective

options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00166

COMMENTER American Electric Power Service Corp.

SUBJECT REC

COMMENT IV. RECYCLING CAPACITY IS INSUFFICIENT AND THE TECHNOLOGY CAN NOT ADDRESS ALL KINDS OF LAMPS. On a case-by-case basis, recycling can be a viable management option. The decision to recycle is often dependent upon proximity to the recycling facility, cost to recycle and the risks associated with the recycling facility itself. Operational, cost effective and environmentally acceptable recycling facilities are few and far between. Besides a few large national firms, most lamp recyclers are small corporations, with limited financial backing. These companies lack environmental impairment insurance, their own transportation fleet and a facility large enough to store bulbs from generator shipments (thus shipments of bulbs from generating facilities must be scheduled based on when the lamps may be processed). Currently within the AEP seven-state service territory, there are no operational recycling facilities. There are two lighting waste recycling facilities reasonably close to our service area, but these two facilities are not equivalent from a services provided or regulatory status standpoint. At these two recyclers, the automated processes only recycle straight fluorescent tubes - no other types of mercury-containing or other spent lamps are processed, unless they are processed by hand. Hand processing is inefficient, slow, and not cost-effective. Obviously there are a myriad of other types of mercury-containing lamps which are produced by generators (i.e., mercury vapor/sodium vapor/street lighting, etc.). Our efforts to find practical, convenient and cost-effective recycling services for these types of lamps have been unproductive. In many cases, what we have

found is the technology simply does not exist to process many of the different types of lamps. Continuing to subject these lamps to RCRA regulations will continue to present the practical handling problems with which the regulated community is currently faced. As an aside, it is important to note that the majority of these recycling facilities require that customers ship bulbs on a hazardous waste manifest, either because of a permit condition or a state rule. Thus, these facilities will not and do not accept shipments of lamps from generators unless they are accompanied by a uniform hazardous waste manifest. Some facilities which already have a RCRA Part B permit would prefer to maintain the status quo (i.e., shipment on a manifest), as a way to reduce competition. In practical terms, generators of otherwise exempt lighting waste now have their lighting wastes drawn back into the RCRA hazardous waste program because of vendor requirements. We propose that EPA solve this problem by clarifying in the exemption that shipments of lighting waste need not be accompanied by a uniform hazardous waste manifest and further, urge states not to require (by operating permit) that shipments of lamps be accompanied by a manifest. Note that, as discussed in Comment V below, this complication affects the universal waste rule option as well.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. In addition, today=s rule makes it clear that handlers of hazardous waste lamps need not use a hazardous waste manifest when sending that lamps to a recycler under federal requirements. States may have more stringent requirements for the management of this waste. However, EPA has encouraged states to adopt the universal waste approach, and many have done so or are preparing to do so in the future.

DCN FLEP-00168

COMMENTER Merck and Company, Inc.

SUBJECT REC

COMMENT The proposed universal waste program is onerous at best. It really provides no relief from the hazardous waste system for anyone other than the generator. In fact, the requirements that are imposed on transporters and the receiving facilities are

disincentives for these facilities, particularly recyclers. Currently there are only a limited number of recognized mercury-containing lamp recyclers and the prices are fairly high. If additional burdens are imposed on these facilities, costs will increase and there will be less incentive for more recyclers to come into the market. This is clearly a disincentive to recycling of fluorescent lamps.
If recycling is an attractive option, more recycling facilities will come on-line, reducing costs for recycling, and therefore encouraging more generators to recycle over landfilling.

RESPONSE

Today's final rule adds hazardous waste lamps to the scope of the universal waste rule. The universal waste rule provides a reduced, or streamlined set of requirements for generators, collectors and transporters of universal wastes. Under the universal waste rule, shipments of universal waste do not have to be accompanied by a hazardous waste manifest. In addition, the packaging, labeling, reporting and record keeping requirements governing generators and transporters of universal waste are significantly less stringent than the Subtitle C hazardous waste management requirements. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent mercury-containing lamps due to the fact that the management requirements are less stringent and less costly. Although the Agency did not limit the universal waste system to the recycling of waste the ability to access large quantities of universal waste from central collection centers may encourage the development of additional safe and effective methods to recycle universal waste.

DCN FLEP-00169
COMMENTER Advanced Environmental Recycling Corp.
SUBJECT REC
COMMENT TECHNOLOGY: Another challenge by the opposition to the Universal waste option is related to the associated technology of recycling fluorescent lamps. The lamp recycling industry has not only evolved from a capacity standpoint but also from a technology standpoint. The technology has become more efficient, production oriented, and normally far exceeds both OSHA and environmental regulatory requirements. Probably a more important aspect of the technology discussion involves the employment of best management practices at lamp recycling facilities. In an effort to provide a comprehensive perspective from the recyclers, the Coalition of Lamp Recyclers was formed. The first task of the coalition was to establish best management practices. These practices include regulatory compliance, packaging and storage standards, transportation, employee training, general plant safety and operations, consolidation

facilities, medical surveillance monitoring, contingency plan, industry hygiene, general housekeeping, recycling products generated, closure, and so forth. These practices are further defined in the Coalition's comments. It is essential that the USEPA provides a means to assure best management practices are in place at viable recycling facilities while concurrently minimizing the impact on generators. AERC/MTI is in favor of a permitting program for lamp and other recycling facilities. This program should assure a fast-track approach of obtaining a permit, combined with strong regulatory requirements for the facilities. These standards will provide new participants to the recycling business with the necessary information for starting a new business and assure everyone is operating by the same rules. The USEPA must continue to understand that with the consistent evolution of the high-tech recycling business, new advancements occur that improve policies, procedures, and environmental controls on a consistent basis. The USEPA should be pleased that even without sound regulation and enforcement, the recycling industry has progressed with improved competency

CAPACITY: With the original concept of Universal waste and emphasis on recycling, there has been a concern relating to the capacity for a national program. In November of 1992, there were only a "handful" of viable recycling facilities throughout the United States. These facilities primarily addressed local regulatory concerns, with a few entrepreneurial ventures starting in anticipation of Universal waste or similar regulatory promulgation. As we enter 1995, there will be approximately 30 operating lamp recycling facilities throughout the country. From a total quantity standpoint, these facilities will come extremely close to handling national capacity. It is clear that for effective logistical capabilities, additional facilities will be required in the central and northwest sections of the country. The lamp recycling industry is comprised of small entrepreneurial organizations with progressive management style and "high-tech" philosophies. It is evident, based on our experience, that this industry can respond very quickly to regulatory changes, enhancements, and so forth in order to provide effective operations throughout the country. If we consider the regulatory agenda instates such as Minnesota and Florida and the industry's ability to respond, it clearly exhibits the previously stated progressive style. In

providing capacity, the lamp recycling industry has, for the most part, become active in the community and environmental business participants, while providing a cross section of jobs in the areas in which they are located.

RESPONSE

The Agency thanks the commenter for submitting information on the hazardous waste lamp recycling industry.

Today=s rule ensures that mercury emissions are minimized during all stages of lamp management. The rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not regulate the specific process of mercury reclamation. EPA believes that state oversight including best management practices, where appropriate, is adequate to ensure that hazardous waste lamps are safely and legitimately recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases.

The final rule also does not affect a facility=s status under other federal and state statutes and regulations. Lamp recycling facilities and downstream users must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA. Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste.

The final rule provides a uniform approach for the management of spent hazardous waste lamps at the federal level. However, individual states may have more stringent requirements for the management of this waste. In addition, since the final rule is less stringent than the previous federal requirements governing the management of spent lamps that exhibit one or more of the characteristics of hazardous wastes, states are not required to amend their state programs and adopt these requirements. However, EPA has encouraged states to adopt the universal waste approach, and many states have done so or are preparing to do so in the future.

DCN FLEP-00169
COMMENTER Advanced Environmental Recycling Corp.
SUBJECT REC
COMMENT PROMOTION OF USEPA'S Waste MANAGEMENT HIERARCHY AND EMPHASIS ON RECYCLING: Allowing lamps to be disposed of at Subtitle D,

non-hazardous landfills will be counterproductive for the national focus for effective decision making and the comprehensive recycling agenda. The USEPA should encourage recycling of the major components of mercury-containing lighting devices, including aluminum end caps, glass, and the hazardous constituent, metallic mercury. The USEPA has expended a great deal of financial and manpower resources to communicate an effective waste hierarchy decision flow and to emphasize recycling. By allowing lamps to be disposed of at Subtitle D, non-hazardous landfills, it will clearly be sending contradictory statements to the regulated community.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-00169

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT REC

COMMENT LOGISTICAL ISSUES: The logistical issues are another major concern in evaluating a practical option for the effective handling of waste fluorescent lamps, especially for remote, less populated areas. Those areas have two major concerns that must be addressed by the USEPA. The first concern is the ability to environmentally and economically handle the lamps, and the second concern is ensuring that remote locations do not become "dumping grounds" for lamps and other mercury-containing devices. It is essential that remote, less populated areas not suffer increased economical and logistical-burden based on the regulatory policies. AERC/MTI believes the existing small-quantity generator exclusion that applies to generators of mercury-containing lamps in this category will provide some relief. These generators, if part of this program, will have a variety of options not available to large generators. In addition, the universal waste will provide generators with increased consolidation capability and more effective and economically efficient transportation options. Therefore, under the universal waste concept, less populated and other remote locations should have minimal negative impact. Currently, the lamp recycling industry is servicing remote locations. Many large retail establishments have implemented a recycling philosophy for all of their locations. Therefore, to be a successful participant in a contract, the recycling company must have the ability to provide service, not only to the large

metropolitan regions but also to the remote, less populated locations. The universal waste option will only make the program more efficient and effective. MR can only be established, consolidation points can be developed, and many other logistical enhancements based on a greater number of participants. In addition, in the entrepreneurial spirit previously discussed, AERC/MTI envisions these remote locations being serviced by smaller organizations within the region which will provide small, central recycling capabilities.

RESPONSE

The Agency appreciates the views of this commenter.

DCN FLEP-00169

COMMENTER Advanced Environmental Recycling Corp.

SUBJECT REC

COMMENT DRUM-TOP CRUSHING: There appears to be many groups encouraging the use of drum-top crushing as an effective approach for consolidating lamps. These crushers provide the operational capability of consolidating approximately 800 to 1,200, 4-foot lamps within a 55-gallon drum. The drums can then be directed to a landfill for ultimate disposal. Although the concept sounds good, there are the following two serious flaws. 1. Drum-top crushing units are not designed to provide short or long-term environmental controls and, 2. The concept of recycling remains non-existent. Viable recycling facilities currently in operation throughout the country are designed with several thousand pounds of activated carbon, monitoring, and other pollution control technology. The use of drum-top crushers and their associated small canisters of carbon and HEPA filters clearly do not provide protection to workers and will, in the long run, be harmful to the previous areas discussed. The USEPA's own studies dispute the drum-top crushing theory. In addition, Exhibit 5 provides further independent analysis.

RESPONSE

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in

volume.@ The crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Some commenters to the proposed spent mercury-containing lamps rule requested that the Agency allow generators of such lamps to crush them on-site before sending them off-site for treatment or disposal. However, as explained in the preamble to the final universal waste rule (60 **FR** 25519), the Agency believes that it is not appropriate to allow universal waste handlers to treat universal wastes because the handlers are not required to comply with the Subtitle C hazardous waste management standards for generators (40 CFR Part 262). These hazardous waste generators must obtain EPA identification numbers, are subject to the 90-day (or 180-day) accumulation limit, and must comply with the technical standards of 40 CFR Part 265 for storage and accumulation units. Because these standards are relatively stringent, EPA=s policy is that generators may treat hazardous wastes on-site, provided that they comply with all applicable requirements of 40 CFR Part 262 for storage and accumulation of hazardous wastes.

Universal waste handlers, on the other hand, are allowed a much longer accumulation time limit of one year and need not comply with specific technical standards for accumulation and storage units. Instead, they are subject only to the general performance standard of managing universal wastes in a manner Athat prevents releases@ to the environment. In addition, information available to the Agency on drum top crushing systems for lamps indicates that these units may allow significant air emissions of mercury, particularly when the units are not in operation, and emissions often may exceed the OSHA limit of 0.05 $mg/m^3$.

DCN FLEP-00170
COMMENTER National Assn. of Energy Services Comp.
SUBJECT REC
COMMENT A. Carefully Managed Recycling Designed to Remove Mercury From the Waste Stream Should Become the Preferred Management Method.
The data presented by the EPA on mercury leachate from landfills certainly would appear to support the conclusion that landfill disposal is a reasonably safe option at this time. However, NAESCO believes that in the long term, we should seek a means of removing mercury waste from the environment to the greatest extent practicable. This would suggest that the EPA might want to focus its initial efforts on reducing the level of mercury that finds its way into landfills. Recycling, therefore, becomes the first cornerstone in these efforts. While the recycling industry still is relatively new, NAESCO believes that the promotion of a mature recycling industry with the capacity and technology to reclaim mercury on a large scale will provide the most sound environmental management course for mercury waste.
It also appears, from conversations between NAESCO

representatives and state regulators, that a number of states already have adopted and several others are moving in the direction of recycling as a preferred method for managing mercury waste. It is not clear that the technologies for economic reclamation are in widespread use at this time, although it appears that they are available and are being used by a growing number of recycling companies. It also appears as though present capacity in the recycling industry may be insufficient to accommodate all spent lamp waste currently being generated. However, by encouraging the growth of this market while developing careful regulatory management practices, the EPA can help to support the development of an industry capable of managing mercury waste on a large scale and in an environmentally safe manner. Initially, NAESCO suggests that the EPA consider encouraging recycling by choosing to adopt relatively burdensome regulatory measures for those who choose landfill disposal for their spent lamps, absent any recycling efforts. At the same time, NAESCO would encourage the EPA to work with interested parties to develop a regulatory regime appropriate to mercury recycling. This should involve requirements for the use of proper recycling processes and equipment. In addition to the regulation of the recycling process itself, any regulatory regime applicable to mercury recycling also should involve the development of requirements for the subsequent use of subcomponents, in particular glass to which mercury has adhered. For example, it appears to NAESCO that the question of how much mercury actually adheres to lamp glass is one on which conclusive data are not available. Similarly, at this time it is not clear to NAESCO that subsequent uses of mercury contaminated glass which involve heat processes are entirely without environmental risk. NAESCO would encourage the EPA to develop, or to require states to develop, a sampling protocol to be applied to mercury-containing subcomponents prior to reuse. With sampling data, provided on a regular basis, the EPA will be in a position to judge the environmental safety of subsequent applications, such as those involving heat processes, or even cold applications like cement production, where the product might later be broken or ground up. Thus, the EPA will be in a position to craft meaningful regulations applicable to the use of lamp subcomponents resulting from recycling.

RESPONSE

The Agency appreciates the views submitted by the commenter. Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. The Agency notes that under today=s rule, hazardous waste lamps sent for disposal must go to a Subtitle C landfill.

DCN SCSP-00172
COMMENTER Advanced Environmental Technology Corp.
SUBJECT REC
COMMENT Recycling technology and capacity is readily available for these devices and should be encouraged. Action by the Agency within this proposal will clearly define to the generating public that these wastes are hazardous, and provide to the generators a user friendly and environmentally efficient management system. AETC does not support any regulatory action that requires lighting manufactures to be responsible for recycling of their products. This would be economically inefficient to business and the public. The lighting industry should continue to focus its efforts on pollution prevention. At the current time, a substitute for mercury has not been identified. In fact, substitutions tried to this point have had even greater environmental impact because of their lack of recycling potential. For example, lighting recyclers are currently facing significant problems with lamps that were tested in the market which fail TCLP for cadmium and may fail for mercury.

Allowing lamps to be disposed of at Subtitle D, non-hazardous landfills will be counterproductive for the national focus for effective decision making and the comprehensive recycling agenda. The USEPA should encourage recycling of the major components of mercury-containing lighting devices, including aluminum end caps, glass, and the hazardous constituent, metallic mercury. The USEPA has expended a great deal of financial and manpower resources to communicate an effective waste hierarchy decision flow and to emphasize recycling. By allowing lamps to be disposed of at Subtitle D, non-hazardous landfills, it will clearly be sending contradictory statements to the regulated community.

RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00174
COMMENTER Illuminating Engineering Soc. of N. Am.
SUBJECT REC
COMMENT If the underlying goal of the universal waste rule is to encourage the recycling of mercury-containing lamps, it will fail if there are too few recycling facilities in operation nationwide, which there currently appear to be. EPA's regulation of lamp disposal should assume that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00174
COMMENTER Illuminating Engineering Soc. of N. Am.
SUBJECT REC
COMMENT Recycling. IESNA supports environmentally-sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, generators, responsible for the downstream management of waste, need assurance that the recycling and reuse practices are safe. Controls should be imposed on air emissions of mercury during the recycling process and the OSHA workplace standard for mercury should be applied. The levels of mercury allowed in materials recovered from lamps should be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under

today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN SCSP-00175
COMMENTER Hazardous Waste Treatment Council
SUBJECT REC
COMMENT The proposed special collection system provides the perfect opportunity for EPA to ease hazardous waste requirements on generators, transporters, and consolidation points that manage used fluorescent bulbs, encourage resource recovery and provide protection of human health and the environment. One HWTC member company, Advanced Environmental Recycling Corporation (AERC) already has in place a sophisticated, state-of-the-art technology that safely and efficiently recycles used mercury-containing fluorescent lamps. The process involves the separation and recycling of the glass, metal, and phosphor powder. The metallic mercury contained in the phosphor powder is thermally separated and then purified through a triple distillation process for subsequent sale. AERC's recycling process is conducted in compliance with all federal and state regulations, provides a far more environmentally protective option for bulbs removed through the Green Lights program than does management of these wastes outside Subtitle C, reclaims valuable materials for reuse, and can be taken advantage of by a generator through participation in Part 273.
RESPONSE
The Agency appreciates the commenter=s submission of information pertaining to lamp recycling activities.

DCN FLEP-00176
COMMENTER Coalition of Lamp Recyclers

SUBJECT REC

COMMENT The recycling industry has adequately responded to the recycling needs of the industries and community and will continue to respond to the demands of the generators. (See attachment 3 outlining the current and future capacity of lamp recycling.) Additionally, increasing the number of mercury-containing lamp recycling facilities enhances the EPA's initiative "Jobs Through Recycling Initiative" and is in harmony with EPA Administrator Browner's "Common Sense Initiative". EPA should promote recycling wherever feasible. Mercury-containing lamps have several components that are recyclable; eliminating the need to manufacturer additional virgin product and also reduces the amount of waste that is being land disposed. EPA's assumption that the "recycling facilities would most likely not be affected by the proposed exclusion" is simply untrue. Predictably, the recycling industry will be faced with the following if lamps are excluded from regulation: The recycling facilities currently operating in states with established rules will continue to recycle lamps. All other recycling facilities will be forced out of business. The technology and a prospering new recycling business enterprise will not be able to flourish. Lamps will be landfilled due to the lower costs of land disposal. EPA requested comment on whether lamps may be better managed either outside of the hazardous waste system or in a reduced regulatory structure within the hazardous waste system. As stated earlier, the lamp recyclers jointly support lamp management in some form. Complete removal of lamps from the hazardous waste management system would eliminate the need for recyclers causing the recyclers to lose the opportunity to conduct business. The economics of recycling versus indiscriminate land disposal would not support their business. Best Management Practices have been drafted and agreed to by the Coalition of Lamp Recyclers stipulating a level of management practices that should be in place for any operating mercury- containing lamp recycler. These Best Management Practices (BMPs) for Lamp Recyclers should be set in place in lieu of a full hazardous waste part B permit. The permit is the single largest impediment to providing recycling opportunities to generators. Lamp recyclers recover glass, aluminum, and mercury-containing phosphor. The phosphor can be retorted (distilled) to recover the mercury. The value of each of these products are low due to the cost of the initial product itself. Full part B permitting would be extremely

> expensive and detrimental to the recyclers and would not provide any added environmental protection over and above the BMPs. The BMPs would allow States to be consistent in the requirements for recyclers and provide States with adequate oversight management parameters to provide protective measures for human health and the environment.
>
> The answer to the mercury-containing lamp disposal issue is available today. Proven, environmentally sound technology exists to recycle the mercury-containing lamps and recover the recyclable materials for other products. The regulatory requirement of recycling would only encourage the advancement and further refinement of this technology. The capacity currently exists or can be in place in the very near future. The recycling industry will respond to the need in a positive and beneficial manner, providing a service that will reduce the amount of mercury being released to the environment, provided the regulatory structure is supportive of this effort.

RESPONSE

The Agency appreciates the views expressed by the commenter. The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Some commenters to the proposed spent mercury-containing lamps rule requested that the Agency allow generators of such lamps to crush them on-site before sending them off-site for treatment or disposal. However, as explained in the preamble to the final universal waste rule (60 **FR** 25519), the Agency believes that it is not appropriate to allow universal waste handlers to treat universal wastes because the handlers are not required to comply with the Subtitle C hazardous waste management standards for generators (40 CFR Part 262). These hazardous waste generators must obtain EPA identification numbers, are subject to the 90-day (or 180-day) accumulation limit, and must comply with the technical standards of 40 CFR Part 265 for storage and accumulation units. Because these standards are relatively stringent, EPA=s policy is that generators may treat hazardous wastes on-site, provided that they comply with all applicable requirements of 40 CFR Part 262 for storage and accumulation of hazardous wastes.

Universal waste handlers, on the other hand, are allowed a much longer accumulation time limit of one year and need not comply with specific technical standards for accumulation and storage units. Instead, they are subject only to the general performance standard of managing universal wastes in a manner Athat prevents releases@ to the environment. In addition, information available to the Agency on drum top crushing systems for lamps indicates that these units may allow significant air emissions of mercury, particularly when the units are not in operation, and emissions often may exceed the OSHA limit of 0.05 $mg/m^3$.

DCN FLEP-00177
COMMENTER Philips Lighting Company
SUBJECT REC
COMMENT Philips Lighting has always been a proponent of quality recycling however, at this time, we feel that our customers are best served with an optional landfill provision.
RESPONSE
Based upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of that rule. The universal waste rule provides a reduced, or streamlined set of requirements for generators, collectors, and transporters of universal waste.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. The rule does not mandate recycling of hazardous waste lamps. Generators have several options with regard to waste management. However, EPA believes that the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste as explained in the preamble, EPA continues to have concern about the long-term effects of releases from municipal solid waste landfills.

DCN FLEP-00178
COMMENTER General Electric Company
SUBJECT REC
COMMENT Second, non- hazardous treatment of mercury containing lamps facilitates recycling for those users choosing that option.
RESPONSE
As explained in the preamble to today=s rule, the Agency has concluded that the proposed conditional exclusion is not sufficiently protective of human health and the environment. In addition, the Agency agrees with these commenters (including many recyclers) who believed that a conditional exclusion would discourage recycling because of the cheaper cost of municipal landfills.

DCN FLEP-00178
COMMENTER General Electric Company

SUBJECT REC
COMMENT The value of materials to be recovered during spent lamp recycling is extremely low. Therefore, for a lamp recovery operation to be successful, unnecessary storage and transportation costs must be minimized.
RESPONSE
In today=s final rule, EPA is adding spent hazardous waste lamps to the universal waste rule. The universal waste rule provides a set of streamlined management standards that represent a significant cost reduction for hazardous waste lamp handlers, compared to the required management standards under full Subtitle C. In addition, adding hazardous waste lamps to the scope of the universal waste rule will result in fewer lamps being managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

Handlers of universal waste lamps may store lamps for a year, and manifests (and thus, hazardous waste transporters) are not required for the transport of universal waste lamps. In addition, record keeping and reporting requirements are minimal. These significant cost reductions over the Subtitle C management system should provide adequate incentive for the increased collection of spent lamps. Increased collection of spent lamps for proper recycling or treatment and disposal under Subtitle C should result in reductions in the amount of mercury potentially emitted to the environment.

DCN FLEP-00178
COMMENTER General Electric Company
SUBJECT REC
COMMENT Recycling. Recycling can produce air emissions during the actual treatment and recycling process as well as during the downstream utilization of the recovered materials. The Research Triangle Institute estimated that only .2 to .4 percent of the mercury from lamps are emitted to the atmosphere from a properly designed and managed recycling facility. [7] [Footnote 7: Truesdale, Beaulieu, and Peirson, Research Triangle Institute, Management of Used Fluorescent Lamps: Preliminary Risk Assessment, May 1993.] At the high end, MRT Recycling Systems in Sweden cautiously estimates mercury airborne emissions from all lamp recycling activity at 3 percent.[8] [Footnote 8: Begley and Linderson, Stockholm University, "Management of Mercury in Lighting Products, " 1992.] Emissions can also be released from the downstream use of recovered materials. The mercury can be imbedded in the glass, phosphor, or the end caps and then released during further processing. For example, when recovered

> glass from mercury containing lamps is melted for re-use, as much as 3 mg of mercury could be released per lamp.[9] [Footnote 9: National Electrical Manufacturers Association, Mercury Content of Residues from Lamp Reclamation, September 1994.] The best management practices for recycling facilities detailed in NEMA's comments would ensure safe recycling operations. These BMPs include recordkeeping, emergency planning, financial assurance, closure requirements, training, as well as plant emission controls under existing OSHA, Clean Air Act, and Clean Water Act regulations. In addition, NEMA has suggested specific requirements designed to ensure that mercury emissions are low during downstream use of recycled lamps. These include a requirement that recyclers disclose the mercury content and the content of other metals for each lot of end product delivered to an end user or broker, or that products meet specific levels for mercury and other contaminants before being shipped. Recyclers selling end products for unknown applications or for heat applied uses would be required to have non-detectable mercury levels in the product or restrict their sales to users with permitted mercury controls for their reuse applications. For non-heat applied applications, the metals levels would be required to meet the universal treatment standards land disposal restriction levels.

RESPONSE

Today=s rule ensures that mercury emissions are minimized during all stages of lamp management. The rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not regulate the specific process of mercury reclamation. EPA believes that state oversight including best management practices, where appropriate, is adequate to ensure that hazardous waste lamps are safely and legitimately recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases.

The final rule does not affect a facility=s status under other federal and state statutes and regulations. Lamp recycling facilities and downstream users must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA. Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous

waste management requirements. If waste residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste.

DCN FLEP-00178
COMMENTER General Electric Company
SUBJECT REC
COMMENT VI. THE ECONOMICS AND ENVIRONMENTAL IMPACTS OF RECYCLING

> Recycling has the potential to be a viable, environmentally sound management option for spent mercury containing lamps. Unfortunately, the current economics of lamp recycling are not favorable due primarily to the inherent low material value of spent lamps. With current market prices, the total value of all raw materials used in a spent four foot lamp is less than 5 cents. The value of recovered materials is even less. The value of a single lamp's mercury is approximately $.0001. [10] [Footnote 10: Calculated for a GE F40T12 lamp.] The low material value of lamps makes recycling an economically precarious business and one that is ripe for abuse through "sham" recycling operations. In addition, because mercury lamp recycling is essentially a high volume, low margin business, the ongoing efforts of lamp manufacturers to source reduce may make the viability of recycling even more challenging in the future. Despite these problems, GE believes that legitimate, self-sustaining recycling markets can develop in certain parts of the country and for certain types of mercury containing lamps. However, for such markets to grow three important factors must be in place: 1. The costs of transportation must be kept low, 2. The costs of recycling processes themselves must be minimized, and 3. Safe options for reusing the recovered materials from lamps must exist. Without low costs and appropriate markets, recycling will either not be able to survive or will be dominated by sham operations performing treatment disguised as recycling. To keep costs low, facilities must be able to be sited and/or modified quickly in areas with large volumes of spent lamps. Also, the products produced at the recycling facilities must be of high quality, with low levels of contamination. A Subtitle C exclusion that allows a range of management options and imposes specific BMPs for recycling and other activities can help create the necessary circumstances for viable recycling markets. It allows for the development of recycling facilities, particularly in densely-populated regions

where there are a large number of lamps generated, landfill space is limited, incineration is commonly used, and transportation costs can be minimized because of the shorter distances between generators and recycling facilities. It also ensures the availability of safe and affordable solid waste landfills for the residues from lamp reclamation that cannot be cost-effectively reused because of market prices or the presence of contaminants.

VII. INCREASING RECYCLING UNDER A SUBTITLE C EXCLUSION As the largest producer of fluorescent lamps in the United States, GE has an important interest in seeing the development of environmentally sound recycling. To date, however, GE has hesitated to recommend recycling as a management option to our customers. GE's primary reluctance stems from the compliance status of most recyclers. Virtually all recycling operations are currently out of compliance with state and federal hazardous waste laws. Most do not have storage permits required by law, nor is proper manifesting occurring when wastes are transported to recycling facilities. Additionally, few recycling facilities are completing land disposal restriction paperwork for the end materials that are landfilled (even for lamps that might fail EP as well as the TCLP characteristic). Many recycling facilities are operating out of compliance even though they have received approval to operate from their states. Furthermore, many of these facilities have invested significant resources in constructing modern facilities but are still failing to comply. What both the facility owners and state agencies have recognized is that full compliance with Subtitle C requirements is both unwarranted and cost prohibitive. Nevertheless, from GE's position, it has been difficult to support the development of recycling operations that operate in violation of existing state and federal laws. If mercury containing lamps continue to be regulated under Subtitle C--either under the current framework or a Universal waste scenario--recyclers will likely face even greater regulatory compliance costs in the future. Several activities within EPA will increase the costs associated with recycling: The land disposal treatment standards under the recently promulgated universal treatment standards. The new universal treatment standards (UTS) for newly characterized wastes is 0.20 mg/l for retort residues and 0.025 mg/l for other residues for mercury. Hence, recycling facilities must now manage their residual

materials to meet these more stringent levels (as opposed to the current levels for D009 EP wastes, e.g., 0.2 mg/l for all residues). In addition, lamp recyclers will be required to meet UTS levels for a range of other trace constituents found in lamps, such as, cadmium and antimony.

EPA's ongoing efforts to revise the definition of solid waste.

A primary focus of EPA's effort to revise the definition of solid waste is to provide greater regulatory control over recyclers. A recent discussion paper from the Definition of Solid Waste Roundtable suggests that commercial recycling facilities be subject to full RCRA permitting even if they do not utilize on-site storage. [11] [Footnote 11: Definition of Solid Waste Roundtable, Revised EPA/State discussion Paper: Rethinking the Definition of Solid Waste, October 1993.] Full RCRA permitting would significantly increase the costs associated with lamp recycling and make it difficult for recycling to be cost-effective. Today, virtually none of the stand alone fixed recycling facilities have RCRA Subtitle C operating permits.

Restrictions on "Toxics Along for the Ride."

The same discussion paper by the Definition of Solid Waste Roundtable identified "toxics along for the ride" as an important concern. The paper proposed three different options or tests to determine if a recycled product included an inappropriate amount of contaminants or toxics: (1) a statistical methodology comparing the recycled product to the original product or raw materials to demonstrate whether there is a significant difference in Appendix VIII constituents; (2) a variance based on the functional or industry specific need justifying a higher concentration of a specific toxic; and (3) a variance based on a demonstration of no significant risk to human health or the environment over the life of the product. Under this type of system, if spent lamps were regulated under Subtitle C, recycled lamps could fail the first test and be regulated as hazardous wastes. Or, lamp recyclers would be required to make extensive demonstrations to justify a variance. In either case, lamp recycling would be significantly discouraged. Recycling facilities have the technical capabilities to comply with all current or future RCRA Subtitle C requirements. But the costs of compliance are prohibitive and will continue to increase. These costs are even more exorbitant when compared to the risks being addressed. Providing a Subtitle

C exclusion with tailored BMPs, on the other hand, will foster the development of recycling. Under such a framework, GE believes it is potentially in a position to work with the recycling industry to assist in developing recycling markets. Specifically, GE could assist by working with recyclers to explore ways in which future products can be designed for disassembly. The compact fluorescent lamp product line is one area where design for disassembly and recycling may be fruitful due to the significant use of plastics. However, compact fluorescent lamp recycling would be even further discouraged under Subtitle C because of the trace presence of other constituents (e.g., various metals) in these lamps. GE could also assist the industry in undertaking feasibility studies on the various end uses of recycled lamp materials. Such end use studies are an important step in ensuring a successful recycling system. These studies will, however, take time to develop which again argues for ensuring that there are a range of management options available at this time. Additionally, GE could expand its application support as products change to assist recyclers. Lighting product lines and product formulations are constantly changing. Keeping abreast with these changes can be both difficult and costly for recyclers who do not have the resources to conduct exhaustive chemical analyses on new products. GE could facilitate the distribution of certain non-proprietary information to recyclers regarding product characteristics. Finally, once recycling operations are operating in full compliance with all state and federal waste regulations, GE will be in a position to allow its sales force to promote safe recycling options. While GE believes these actions will go far in facilitating lamp recycling in the United States, they cannot be achieved overnight. If recycling is pushed too fast without being given the proper technical and market support, sham recycling operations will no doubt proliferate and recycling "products" of poor quality and high contamination will be widely distributed. The environmental impacts of recycling will be worse than the impacts from regulated solid waste land disposal. Because recycling will need time to develop, disposal in landfills with proper BMPs must remain available. This ensures an environmentally safe management option for lamp users who do not have access to recycling operations in their area. One approach EPA could take is to include a sunset provision on the exclusion, allowing the Agency to reevaluate the viability and

environmental consequences of recycling and Subtitle D landfilling. In the long run, GE believes that recycling and safe landfilling should co-exist as viable management options.

RESPONSE

Based upon additional analyses of the behavior of mercury in the environment and the potential for mercury to be emitted to the environment during lamp management, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of that rule. The universal waste rule provides a reduced, or streamlined set of requirements that are less stringent than the full Subtitle C management standards.

Today=s rule ensures that mercury emissions are minimized during all stages of lamp management. The rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not regulate the specific process of mercury reclamation. EPA believes that state oversight including best management practices, where appropriate, is adequate to ensure that hazardous waste lamps are safely and legitimately recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The Agency agrees with the commenter that reducing costs is needed to encourage recycling. The universal waste rule represents a significant cost reduction over Subtitle C management requirements for generators, collectors, and transporters. Under the universal waste regulations, universal waste lamps are not subject to manifesting requirements. Handlers of universal waste lamps may store the lamps for one year to facilitate economical consolidation and transport of lamps to proper treatment or recycling facilities.

Destination facilities are subject to full Subtitle C regulation, including permitting requirements and LDR requirements. Recycling processes are exempt under 40 CFR '261.6(c)(2), therefore they are not required to obtain a hazardous waste treatment permit; unless, storage of lamps prior to recycling occurs. Recycling facilities that process hazardous waste lamps but do not generate hazardous waste residuals are not subject to the LDR record keeping requirements under '268.7, but are subject to a one-time certification that must be placed in the recycler=s files (and sent to the EPA region) which states that the waste no longer exhibits a hazardous waste characteristic ('268.9(d)). The Agency notes that hazardous waste that is characteristic for mercury only that is going to be land disposed is subject to the LDR treatment standard of 0.20 mg/l (using the TCLP) for waste in the low mercury subcategory ('268.40). This type of waste is not subject to a

treatment standard that includes additional standards for Aunderlying hazardous constituents.@ For additional information on the applicability of LDR to hazardous waste lamps, the commenter can contact the RCRA Hotline at (800) 424-9346.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Today=s rule does not mandate the recycling of hazardous waste. Generators have several options with regard to waste management, but EPA believes that the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

The final rule does not affect a facility=s status related to other federal and state statutes and regulations. Lamp recycling facilities must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA. Residuals from recovery operations must be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed as hazardous waste.

As explained in the preamble of today=s rule, the Agency does not believe that its proposed conditional exclusion is sufficient to protect human health and the environment. In particular, it is not feasible from a legal or enforcement standpoint to require numerous best management practices for a waste while excluding that waste from Subtitle C regulation. However, the Agency supports the commenter=s desire to work with recyclers to develop new products and end uses. EPA believes that such cooperation is possible and desirable under the universal waste approach.

The Agency is not including a sunset provision with today=s final rule. The Agency believes that the data and information provided to the Agency and the Agency=s own studies and analyses that were conducted since the hazardous waste lamps rulemaking was proposed provide adequate evidence of the behavior of mercury in the environment and the potential releases of mercury to the environment during lamp management activities to support today=s final rule. The Agency notes, however, that should sufficient and compelling information related to the behavior of mercury become available in the future, the Agency may always re-evaluate the standards promulgated in today=s final rule.

DCN FLEP-00179
COMMENTER Environmental Defense Fund
SUBJECT REC
COMMENT Mercury-Containing Lamp Issues: There are two strategies for reducing mercury entering the environment from fluorescent lamp use: source reduction and environmentally-sound recycling with mercury recover/reuse. Both of these approaches should be used with mercury-containing fluorescent lamps and High Intensity

Discharge lamps. Since fluorescent lamps represent the highest efficiency converters of electricity to light, their share of the lighting market is likely to continue to increase; the recent successful mass introduction of compact fluorescent lamps with electronic ballasts is in accord with these expectations.

RESPONSE

The Agency appreciates the views of this commenter.

DCN FLEP-00179

COMMENTER Environmental Defense Fund

SUBJECT REC

COMMENT Because source reduction alone is unlikely to eliminate mercury use in lamps in the foreseeable future, the national policy for waste stated in Section 6602(b) of the Pollution Prevention Act of 1990 requires EPA to utilize environmentally-sound recycling prior to allowing treatment and disposal of these wastes. [10] [Footnote 10: Section 6602 of the Pollution Prevention Act of 1990 states that "The Congress hereby declares it to be the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner" (emphasis added).] The value of reclaimed materials from spent lamps, however, is not great enough to ensure that these wastes will be recycled without regulations prohibiting their disposal in municipal solid waste landfills. [11] [Footnote 11: Note that the cost of mercury does not "internalize" (i.e., through governmental intervention via special taxes, etc.) any of its environmental costs such as fish consumption bans and advisories, and reflects only unregulated market supply and demand conditions.] Moreover, if EPA grants a conditional exclusion form RCRA Subtitle C for these wastes, other existing or not-yet-developed mercury-containing wastes (or other waste that fail the Toxicity Characteristic) may seek similar exclusions, thereby having this rule set an undesirable precedent. Environmentally-sound recycling of spent lamps requires a processing technology that prevents release of toxic chemicals such as mercury into the environment, and which

simultaneously protects recycling plant workers from exposure to toxic chemicals. Further, materials reclaimed in these recycling processes should be reused, following any necessary additional processing. Existing fluorescent lamp recycling facilities recover only the mercury contained in the lamp's phosphor coating, not the mercury embedded in the glass during lamp use, though that mercury could be liberated and potentially recovered if the glass were heated sufficiently. Spent lamp phosphor and mercury-contaminated glass are waste products. Using an estimate of 550 million spent fluorescent lamps/year and 20 mg of recoverable mercury/lamp, 11 metric tons (Mg) of mercury from spent lamps are potentially recoverable through environmentally-sound recycling processes, a significant and rising percentage of anthropogenic mercury waste generation. In those states that have required spent lamp recycling, local firms have opened to recycle lamps. Local recyclers are apparently favored to minimize the transportation costs of intact spent lamps--transportation costs represent a significant fraction of the lamp recycling cost because of the inefficiency of shipping low density, uncrushed lamps. Existing recycling firms have facilities that can accommodate a substantial fraction of the total load expected in their state or region. Excess capacity exists at many of these facilities if they decide to operate for more than one shift, with no additional capital investment needed. [12] [Footnote 12: "Management of Used Fluorescent Lamps..," op. cit., p. 130.]

RESPONSE

The Agency appreciates the views of this commenter.

DCN FLEP-00182

COMMENTER Eastman Kodak Company

SUBJECT REC

COMMENT Diverting mercury-containing lamps from Subtitle C facilities to recycling facilities or MSW landfills also will conserve valuable capacity at the hazardous waste facilities for materials more deserving of that level of management.

RESPONSE

Today's final rule adds hazardous waste lamps to the scope of the universal waste rule. The universal waste rule provides a reduced, or streamlined set of requirements that are less stringent than the full Subtitle C management standards.

The potential for mercury emissions occurs when hazardous waste lamps are not managed in a

protective manner. Studies conducted by the Agency indicate that the greatest potential for mercury emissions from spent lamps occurs during storage and transport. Today=s rule ensures that mercury emissions are minimized during all stages of lamp management. The rule includes storage and packaging standards for handlers of mercury lamps to ensure the proper management of spent lamps and to prevent uncontrolled and unintentional breakage during storage and transport to the recycling or treatment facility. Destination facilities (i.e., recycling facilities and treatment facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities.

Adding spent hazardous waste lamps to the universal waste rule will improve waste management practices for lamps. The universal waste rule represents a significant cost reduction over Subtitle C management requirements of generators, collectors, and transporters. Fewer lamps will be managed in the municipal solid waste stream, therefore reducing the number of lamps going to municipal combustors and decreasing the potential for lamps to be crushed and/or broken in uncontrolled environments during storage and transport (e.g., dumpsters and garbage trucks).

DCN SCSP-00186
COMMENTER Nine West Technologies, Inc.
SUBJECT REC
COMMENT The retort method, used by Advanced Environmental Corp. of Allentown, PA, or the precipitation method, which will be used by NWT, will return mercury to the stream of commerce, NOT to the biocycle. A further consideration as to the desirability of recycling lamps is the fate of other products in the mix - glass and aluminum. The glass materials reclaimed from lamps can be used by the fiberglass industry, glass block manufacturers, or manufacturers of window panes. Glass manufacturing routinely uses a certain percentage of scrap glass (known as cullet) in its operation. Re-use of such glass saves about 25% of the energy required to melt virgin materials. Recycling of aluminum saves more than 90% of the energy required to produce virgin aluminum.
RESPONSE
The Agency thanks the commenter for the additional information on the recyclability of hazardous waste lamps.

DCN FLEP-00187
COMMENTER PacifiCorp
SUBJECT REC
COMMENT V. RECYCLING SHOULD BE ENCOURAGED, BUT DISPOSAL IN QUALIFIED MSWLFs MUST REMAIN A VIABLE OPTION FOR LAMPS
While the proposal does not distinguish between disposal versus recycling as a condition for qualifying for either management option (i.e., the

conditional exclusion or the universal waste rule), certain commentators may be taking the position that any alternative management program for mercury-containing lamps must be conditioned on recycling. While PacifiCorp fully supports the recycling of mercury-containing lamps and recognizes that, in appropriate circumstances and with implementation of adequate controls, recycling is a viable management option, recycling cannot be the only management option for lamps under either scenario. Not only is disposal in MSWLFs fully protective of human health and the environment, but PacifiCorp is concerned that there is not adequate, environmentally protective recycling capacity to accommodate the large volumes of lighting wastes that would be generated by full participation in Green Lights and similar programs. For example, as of 1993, there were only three fully operational mercury retorters in the country, only two of which could retort mercury from fluorescent powder. PacifiCorp estimates that approximately 90 million fluorescent tubes are removed from service per year in California alone, with many more hundreds of millions of bulbs removed from service per year in the remaining states. In California, reclaimers can each process about 400,000 tubes a month which equates to 5 drums a month of fluorescent powder. Retorters can process about 20 drums per-week. Processing takes up to two days. Based on this statistic, California alone could generate enough material to take care of one of the retorter's quotas. Thus, adequate and environmentally sound recycling capacity is clearly an issue of concern for any participant in an energy-efficient relamping program. Perhaps of more concern is the fact that certain recycling operations may not be fully adequately protective of human health and the environment. Indeed, one case study in the RTI Report demonstrates that "mercury recovery facilities can have significant negative environmental impacts through poor operating practices and inadequate emission controls. The concentration of mercury-bearing wastes at such facilities makes adequate oversight of their design and operations a necessity for protection of human health and the environment." RTI Report at 139-140,176. As EPA's own mercury emissions report indicates, emissions from secondary mercury facilities are on par with emissions from broken mercury-containing lamps. See EPA Emissions Report at 3-11, 3-70. PacifiCorp wishes to emphasize that there are a number of qualified, environmentally sound

> recycling facilities in existence across the country. However, it is important that EPA (and the states) not be lured into believing that recycling is, at the present time, the panacea for the management of mercury-containing lamps. While recycling is a laudable goal, there is still a need to develop a national recycling infrastructure that is environmentally sound and capable of accommodating the large volumes of lighting wastes from relamping programs. At present, however, both environmentally sound recycling and management in qualified MSWLFs must be preserved as viable options for mercury containing lamps.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a

variety of land disposal settings are ongoing).

DCN FLEP-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT REC
COMMENT Although the universal waste rule approach encourages recycling, there are a limited number of these facilities currently available. It also does nothing to eliminate the stigma associated with hazardous waste management facilities.
RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00190
COMMENTER Browning-Ferris Industries
SUBJECT REC
COMMENT 3.0 Mercury Lamp Recycling Has To Include Recycling of Mercury
BFI strongly supports recycling all elements of the waste stream. However, BFI strongly believes that lamp recycling has to include significant recycling of the mercury contained in these lamps, otherwise there is little environmental benefit gained. The proposed rule does not offer any discussion of the relative environmental benefits of mercury lamp recycling versus other disposal options and full implementation of the Green Lights program. Several key questions need to be addressed in order to determine any net benefits of lamp recycling in comparison to disposal or source reduction options. What is the recovery rate for mercury in mercury lamp recycling operations? What is the environmental fate of the mercury that is not recovered? Of the mercury that is recovered is it in a form that can be used to replace virgin sources of mercury? What is the environmental fate of reclaimed mercury subjected to further processing before it is used in manufacturing of products? What levels of mercury are found in the glass and other reclaimed portions of lamps that are recycled. Is this residual mercury incorporated into other products even though it may serve no functional value?
RESPONSE

Today's final rule adds hazardous waste lamps to the scope of the universal waste rule. The universal waste rule provides a reduced, or streamlined set of requirements for generators, collectors and transporters of universal wastes.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent mercury-containing lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Handlers of universal waste lamps may store lamps for a year, and manifests (and thus, hazardous waste transporters) are not required for the transport of universal waste lamps. In addition, record keeping and reporting requirements are minimal. These significant cost reductions over the Subtitle C management system should provide adequate incentive for the increased collection of spent lamps and potential incentives for greater participation in energy-efficient lighting programs. Increased collection of spent lamps for proper recycling or treatment and disposal under Subtitle C and increased participation in energy-efficient lighting programs should both result in reductions in the amount of mercury potentially emitted to the environment.

Although, under the universal waste rule, destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, mercury containing lamps can be safely recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions due to the fact that it is in the recycling facility's best economical interest to strive to limit mercury releases since mercury is essentially the product of the recovery process. The Agency also does not have the authority to regulate products produced from the recycling process.

DCN FLEP-00190
COMMENTER Browning-Ferris Industries
SUBJECT REC
COMMENT Clearly, cost-effective recycling that includes the substantial recycling of the mercury in mercury lamps is a highly desirable management option that the Agency ought to encourage. However, at present the limited infrastructure and relatively high costs associated with mercury lamp recycling preclude this management option on a broad scale.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required

to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT REC
COMMENT V. RECYCLING IS A LAUDABLE MANAGEMENT OPTION, BUT DISPOSAL IN QUALIFIED MSWLFS MUST REMAIN A VIABLE OPTION FOR LAMPS While the proposal does not distinguish between disposal versus recycling as a condition for qualifying for either management option (i.e., the MSWLF option or the universal waste rule), certain commenters may be taking the position that any alternative management program for mercury-containing lamps must be conditioned on recycling. While USWAG fully supports the recycling of mercury-containing lamps and recognizes that, in appropriate circumstances and with implementation of adequate controls, recycling is a viable management option, recycling cannot be the only management option for lamps under either scenario.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT REC
COMMENT While there are a number of qualified recycling facilities in existence across the country, it is important that EPA (and the states) not be lured into believing that recycling is, at the present time, the panacea for the management of mercury-containing lamps. While recycling is a laudable goal, there is still a need to develop a national recycling infrastructure that is environmentally sound and capable of accommodating the large volumes of lighting wastes from relamping programs.

RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00192
COMMENTER Certified Maintenance Services, Inc.
SUBJECT REC
COMMENT Certified Maintenance Services, Inc. supports environmentally sound and cost effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of reclaimed products is necessary. Again, as significant handlers of this waste stream, we remain responsible for its downstream management and would like to have some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA work place standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream reuse process involving heat, which could cause any mercury contained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00196
COMMENTER American Lighting Association
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, it has been the experience of our member companies that there are too few recycling facilities in operation currently to make the universal waste approach feasible nationwide. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling structure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00196
COMMENTER American Lighting Association
SUBJECT REC
COMMENT The American Lighting association supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of reclaimed product is necessary. Again as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from down stream re-use processes involving heat, which would cause any mercury entrained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to

hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00197
COMMENTER Cincinnati Gas and Electric Company
SUBJECT REC
COMMENT While CG&E believes that the recycling of spent lamps is the preferred alternative in some cases, recycling is not the solution for the management of all spent lamps. First, recyclers cannot currently accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Second, all recycling facilities may not be as environmentally protective in the management of spent lamps as qualified MSWLFs. In many cases, the management of spent lamps in a qualified MSWLF is more protective of human health and the environment than sending the lamps to a recycling facility where it may be unclear how much of the mercury is actually being recovered, by what means such recovery is conducted, and how the treatment residuals are being reused.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate

the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00199
COMMENTER National Association of Electric Dist.
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, it has been our experience that there are too few recycling facilities in operation currently to make the Universal waste approach feasible nationwide. Reports from our members in several states substantiates this. In our view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00199
COMMENTER National Association of Electric Dist.
SUBJECT REC
COMMENT Recycling NAED members support environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. In the state of Minnesota, the cost for our members to dispose of spent lamps is more than they sell the lamps for in the first place. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in material recovered from lamps should be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat, which would cause any mercury contained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN SCSP-00201
COMMENTER Northeast Utilities
SUBJECT REC
COMMENT II. Limited Recycling Options. Currently, only one firm in the eastern United States, AERC in Pennsylvania, accepts fluorescent lamps for recycling. Accordingly, if the agency retains regulations prohibiting lamp wastes from land disposal, some provision must be made for a temporary capacity variance. AERC cannot handle the volume generated by all lamp generators in the

region.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00202

COMMENTER Union Camp Corporation

SUBJECT REC

COMMENT RECYCLING OF LAMPS. UCC supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of the reclaimed products is necessary. Again, as generators of the waste stream, we remain responsible for its downstream management and would like some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA work-place standard for mercury be applied. We also believe that the level of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream re-use processes involving heat which would cause any mercury entrained in the materials to be released.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used

in a manner constituting disposal.
DCN FLEP-00204
COMMENTER American Lamp Recycling, Ltd.
SUBJECT REC
COMMENT First, the use of the terms "mercury reclamation facility" and "destination facility" within the preamble and the proposed regulations should be reconciled with the defined regulatory term "designated facility." Mercury-containing lamps contain resources other than mercury, including glass and scrap metal, which are recoverable as a usable product with a positive cash value. The undefined term "mercury reclamation facility" is a misnomer which implies that only facilities that process lamps to recover mercury (even if they ultimately land dispose of 99.986% of an average four foot tubular fluorescent lamp) are lamp recycling facilities and, that the RCRA exempt mercury reclamation process is some how regulated in a manner equivalent to a permitted RCRA treatment system. Waste recycling includes the reclamation of useful constituent fractions within a waste material or the removal of contaminants from a waste to allow it to be reused (note to Form IC, US EPA RCRA Biennial Report Form). Not all lamp recycling facilities conduct on-site mercury reclamation (many lamp recyclers, including ALR, Ltd., remove the mercury from lamps and ship the mercury-containing phosphor powders and carbon filters from their recycling operations to off-site facilities with RCRA exempt mercury recovery operations) and, not all mercury reclamation facilities reclaim the lamp's scrap metal and glass. The Agency, by using the term "mercury reclamation facility", is creating undefined language which has no regulatory or enforcement basis for distinction from any other recycling operation conducted in accordance with 40 CFR 261.6(c)(2). Additionally, while RCRA exempt, all lamp recycling systems, including on-site crushing (treatment), are subject to compliance with Federal and/or State air permitting and compliance regulations. "Destination facility", which the Agency uses under option 2 of the proposal, is a new term that has no regulatory definition or meaning. Additionally, the requirements the Agency has proposed for this new entity equate to an incomplete rendering of be definition of a "designated facility".
RESPONSE
The term Adestination facility@ is defined in 40 CFR 273.9, of the universal waste regulations. A destination facility is a facility that treats, disposes of, or recycles a particular category of

universal waste. A facility that only accumulates universal waste is not a destination facility for purposes of Part 273. The Agency agrees with the commenter that lamps may be managed at different types of recycling facilities, including mercury reclamation facilities and facilities that reclaim other components of spent lamps. Today=s rulemaking therefore does not include Amercury reclamation facility@.

DCN FLEP-00214
COMMENTER American Municipal Power-Ohio, Inc.
SUBJECT REC
COMMENT While AMP-Ohio supports recycling, recycling is not the answer to every lamp disposal problem. Each generator needs to have the ability to select the most economical and environmentally sound method of disposal. Because Ohio has an approved Subtitle D solid waste landfill program, spent bulbs landfilled as municipal solid waste will be properly contained. As mercury recycling capacity increases in Ohio, AMP-Ohio expects recycling to compete more effectively with landfills and play a more important role in spent lamp disposal.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. As explained in the preamble to today=s rule, the Agency has concern about the potential for long term releases of mercury from municipal solid waste landfills.

DCN FLEP-00222
COMMENTER Columbus Southern Power & OH Power Co.
SUBJECT REC
COMMENT RECYCLING OF LIGHTING Waste We also believe that the recycling of lighting waste is not the best-option in all situations for handling lighting waste. Lighting waste recyclers could not handle all waste mercury-containing lamps generated and there is no guarantee that all mercury recyclers handle mercury lighting wastes in a manner that is safer than that of a state-of-the-art synthetically-lined municipal solid waste landfill. Also, it is often not practical for facilities generating small amounts of lighting waste through routine replacement of burnt-out bulbs to recycle these small amounts of bulbs.
RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. As explained in the preamble to today=s rule, the Agency has concern about the potential for long term releases of mercury from municipal solid waste landfills. EPA also notes that the replacement of small amounts of lighting waste will often be subject to the exemption for CESQGs.

DCN FLEP-00223
COMMENTER Owens-Corning Fiberglass Corporation
SUBJECT REC
COMMENT 3. Owens Corning currently sends the majority of its used fluorescent light bulbs to a mercury reclaimer. We have found that there is sufficient capacity at present to handle the current rate of light bulb disposal. We have inspected these facilities and find their processes to be environmentally sound.
RESPONSE
The Agency appreciates the information provided by the commenter.

DCN FLEP-00224
COMMENTER Amtech Lighting Services
SUBJECT REC
COMMENT Although Amtech Lighting Services chooses to recycle its lamps, we strongly support the need to assure that a variety of safe and cost effective options are available until a national recycling infrastructure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00224
COMMENTER Amtech Lighting Services
SUBJECT REC
COMMENT C. Recycling Amtech Lighting Services completely supports

environmentally sound and cost effective recycling of mercury containing lamps. We also are very concerned with the necessary assurance needed to control the process of recycling to insure pollution control for air and materials to be released through the process of recycling as we all are responsible for down stream management.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00227
COMMENTER Page Electric Utility
SUBJECT REC
COMMENT While Page Electric Utility supports recycling spent lamps in most cases, recycling is not the solution for the management of all spent lamps. Recyclers cannot accommodate the huge volume of lamps that would be generated by full participation in relamping programs. Furthermore, all recycling facilities are not managed in the same way. Some recycling facilities are not as environmentally protective as qualified municipal solid waste landfills, especially landfill operating under EPA's new municipal solid waste landfill standards. These landfills are equipped with liners and leachate collection systems.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or

effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. As explained in the preamble to today=s rule, the Agency has concern about the potential for long term releases of mercury from municipal solid waste landfills.

DCN FLEP-00228
COMMENTER STAPPA/ALAPCO
SUBJECT REC
COMMENT By encouraging lamp recycling, not only would mercury emissions from municipal waste combustors not increase, they would most likely decrease, given the fact that the recycling infrastructure would improve and more companies, municipalities and homeowners would participate.
RESPONSE
The Agency appreciates the views expressed by the commenter.

DCN FLEP-00229
COMMENTER Global Recycling Technologies, Inc.
SUBJECT REC
COMMENT 14. The Coalition of Lamp Recyclers have drafted and signed on to a set of Best Management Practices.

BEST MANAGEMENT PRACTICES The Coalition of Lamp Recyclers has drafted and signed a set of BMP's for recycling. These procedures are for the most part indicative of the operating procedures currently used in the industry. The Coalition strongly advocates for compliance to these practices as an alternative to full Subtitle C regulatory control.
RESPONSE
The Agency commends hazardous waste lamp management facilities for their efforts in establishing best management practices to ensure the safe and protective management of spent hazardous waste lamps.

DCN FLEP-00234
COMMENTER Minnesota Mining and Manufacturing (3M)
SUBJECT REC
COMMENT 2. 3M believes that reasonable, cost-conscious, controls are needed on the recycling process itself and also on the quality and use of the reclaimed materials. As a generator, 3M is concerned with the proper management of each waste stream including reclaimed materials and residues from recycling operations. 3M recommends that the subject recycling facilities should control air emissions from the recycling process and also

adhere to the requirements of the OSHA workplace standard for mercury. 3M also believes that a strict limit on allowable mercury should be placed on recovered materials to avoid unsafe exposures to the end-user. This is especially important for processes which involve heat as mercury could be released into the environment. It is also important that the control requirements are reasonable and would ensure adequate protection of human health and environment but would not significantly increase the cost to utilize such operations.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00238

COMMENTER Energy Specialties, Inc.

SUBJECT REC

COMMENT Regarding recycling, ESI strongly supports efforts at cost-effective and environmentally beneficial methods for recycling mercury. As regular handlers we are interested in responsible and safe practices for handling mercury wastes. ESI believes that controls on mercury emissions during recycling are warranted and that OSHA rules need to be applied.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used

in a manner constituting disposal.
DCN FLEP-00239
COMMENTER National Sign Association
SUBJECT REC
COMMENT VII. Recycling Comments NESA strongly supports the concept of recycling under appropriate economic and technical circumstances. But NESA Members have learned that recycling costs vary considerably by region. In some regions of the country recycling is the least expensive option; in others it is the most expensive; and in some regions recycling fluorescent lamps is less expensive than sending them to a RCRA Subtitle C treatment facility but more expensive than NESA's preferred Alternative I (the "Conditional Exclusion" alternative). NESA Members recycle when recycling makes economic sense; when it does not, the lamp wastes are landfilled or incinerated. In addition, NESA Members have learned that recycling does not always reclaim 100% of the mercury--some mercury-recycling and recovery technologies leave a fraction of the mercury remaining on the scrap glass. If the glass is then recycled without being washed, the mercury "goes up the stack" and is lost. If the scrap glass is not recycled it is encapsulated and landfilled. Finally, at present recycling can only accommodate 15-20 percent of the total volume of lamps generated today. (95-100 million lamps recycled v. 500 million lamps generated). A program that encourages. large re-lamping would swamp today's recyclers. Furthermore, not all recyclers are as protective of the environment as a qualified MSW landfill, especially landfills operating under EPA's new standards. Indeed, in many cases the management of spent lamps in a qualified MSW landfill is more protective of human health and the environment than sending the lamps to a recycling facility where it is unclear (I) how much of the mercury is actually being recovered and by what means such recovery is conducted, and (ii) how the treatment residuals, e.g., the glass and metal parts, are being reused.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00240
COMMENTER Luminaire Service, Inc.
SUBJECT REC
COMMENT Luminaire Service supports recycling of mercury-containing lamps but believes that controls on the process and on the reclaimed products are necessary. As stated previously, as generators, we are responsible for the waste and are concerned about its handling. Therefore, we would like to see regulations imposed on the recyclers controlling air emissions of mercury during the process and that the OSHA workplace standard for mercury be applied. We also believe that the mercury contained in the materials recovered from lamp recycling be strictly controlled to eliminate unsafe exposure from reuse processes involving heat which could release mercury from the materials.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under

today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00246
COMMENTER Efficient Lighting and Maintenance, Inc.
SUBJECT REC
COMMENT Efficient Lighting supports recycling of mercury contained lamps if it is environmentally sound and cost-effective. We believe there is a need for controls on the process itself and controls over the quality and use of the reclaimed product. Assurances are needed that the recycling and reuse practices are safe as Efficient Lighting is ultimately responsible. OSHA needs to control the air emissions of mercury during the recycling process and set a standard for mercury in the workplace. The mercury levels that will be allowed in recovered lamps needs to be limited to avoid unsafe exposure or leakage where the reuse process uses heat.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management

controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00260
COMMENTER Salt River Project
SUBJECT REC
COMMENT While SRP believes that the recycling of spent lamps is the preferred alternative in some cases, EPA must understand that recycling is not the solution for the management of all spent lamps. First, recyclers cannot accommodate the huge volumes of lamps that would be generated by full participation in relamping programs. Second, all recycling facilities are not as environmentally protective as the management of spent lamps in qualified MSWLFs, particularly landfills operating under EPA's new MSWLF standards. In many cases, the management of spent lamps in a qualified MSWLF is more protective of human health and the environment than sending the lamps to a recycling facility.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

As explained in today=s preamble, the Agency believes that its proposed conditional exclusion (which would have allowed spent lamps to go to municipal solid waste landfills) is not sufficiently protective of human health and the environment. Since mercury can be found in municipal landfill leachate and releases remain a concern (especially for the long term), the Agency believes that compliance with the substantive requirements of the LDR program is still necessary to minimize risks from managing spent hazardous waste lamps (studies on the movement of mercury in a variety of land disposal settings are ongoing).

DCN FLEP-00264
COMMENTER Lighting Maintenance, Inc.
SUBJECT REC
COMMENT Lighting Maintenance supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, controls on the recycling process itself and on the quality and use of reclaimed products is necessary. As significant handlers of this waste stream, we remain responsible for it's downstream management and would like to have some assurance that recycling and reuse practice is safe. We recommend that controls be imposed on air emission of mercury during the recycling process and that OSHA work place standards for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream reuse processes involving heat, which causes mercury contained materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00267
COMMENTER ABD Lighting Management Co., Inc.
SUBJECT REC
COMMENT ABD Lighting Management Company supports environmentally sound and cost- effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of reclaimed products is necessary. Again, as significant handlers of this waste stream, we remain responsible for its downstream management and would like to have some assurance that recycling and reuse practices are safe. We recommend that controls be imposed an air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from down- stream reuse processes involving heat, which could cause any mercury contained in the material to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00277
COMMENTER Taunton Municipal Lighting Plant
SUBJECT REC
COMMENT While TMLP supports recycling spent lamps in most cases, recycling is not the solution for the management of all spent lamps. Recyclers cannot accommodate the huge volume of lamps that would be generated by full participation in relamping programs.

RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00291
COMMENTER A-1 Lighting Service, Inc.
SUBJECT REC
COMMENT Recycling is strongly supported by this company. Controls on the recycling process and the quality and use of reclaimed products is necessary.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT REC
COMMENT To date, Ohio is aware of one commercial facility that recycles mercury lamps in Ohio but at least two other companies have expressed interest in establishing a recycling facility. Most of these companies look at hazardous waste permitting requirements or the conditional exclusion as impediments to recycling and are not in favor of such actions. The most frequent complaint from the regulated community on recycling lamps is the high cost

involved.
Many companies still recycle their lamps regardless of cost out of liability concerns in disposing of lamps at either a solid waste or hazardous landfill.

The Ohio EPA receives numerous inquiries from the regulated community expressing willingness to cooperate with state guidelines if they are informed of these guidelines. As more recyclers establish businesses in Ohio, the competition factor will probably lower the cost of transporting and recycling lamps. Expansion of the recycling market will also probably make recycling more attractive to generators by offering more diversified services and making pickup and transportation of lamps more convenient.

RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00297
COMMENTER Florida Dept. of Environ. Protection
SUBJECT REC
COMMENT Destination Facilities. While the EPA considers a destination facility to be the final facility where recycling or disposal is accomplished, it should be aware that the most cost and environmentally efficient recycling system would include at least two destination facilities for the recycling process. For example, a volume reduction facility may receive MCLs or MCDs from generators and crush them to reduce their volume by 90 percent. This would reduce the number of trips required to deliver MCLs or MCDs to the final destination facility for retorting and thereby reduce transportation costs and the associated tail pipe emissions or a number of recovery facilities may separate the MCL components such as glass, the metal end caps and the phosphor powder, and then send the mercury-containing powder to a retort or distillation facility for reclamation of the mercury. Instead of every recovery facility having a retort unit, it may be more economically feasible to have a retort/distillation unit for every so many recovery facilities. Our research and discussions with crush and sieve type lamp recycling facilities and retort/distillation facilities indicate that it would take 5 or 6 fluorescent lamp crush and sieve operations to supply enough mercury-laden phosphor powder to keep one batch retort unit busy. Therefore

the EPA needs to address shipments in between these different types of destination facilities. While the recovery and reclamation of the mercury are worthwhile goals, considerable care must be taken to insure that the maximum amount of mercury is being removed from the MCLs and MCDs [mercury-containing lamps and mercury containing devices]. The recycling process is very expensive, especially considering the amount of mercury being recovered. In light of the claims being made that the mercury losses from landfills are negligible, it must be ensured that the mercury losses from the recycling process are even more negligible in order to justify the recycling costs. The Department believes that the technology currently exists to recover 98 percent of the mercury from MCLs and 99 percent from MCDs. In the near future, 99 percent mercury recovery should be achievable for MCLs. These recovery levels should be required of all mercury recovery/recycling facilities to insure that the recycling option achieves the best results possible.

RESPONSE

The Agency thanks the commenter for provided information related to the spent lamp recycling market. The Agency has decided to amend the universal waste Management Standards (40 CFR Part 273) to include hazardous waste lamps within the scope of that rule. The universal waste rule provides a reduced, or streamlined set of requirements less stringent than full Subtitle C requirements. Under the universal waste rule, destination facilities (i.e., recycling facilities and treatment and disposal facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment and storage facilities. Although destination facilities are subject to the RCRA Subtitle C hazardous waste management requirements for treatment and storage activities, the Agency does not have the authority to regulate the specific process of mercury reclamation under the scope of this rulemaking. EPA believes that with adequate state oversight, mercury containing lamps can be safely recycled and the mercury reclaimed.

The crush and sieve operation facilities described by the commenter fall within the definition of Adestination facility@ in the universal waste rule. Crushing meets the definition of treatment in 40 CFR 260.10. The universal waste rule prohibits handlers from treating universal wastes. Universal waste treatment activities may only be conducted at permitted or interim status facilities.

DCN FLEP-00300
COMMENTER ElectricSave Company
SUBJECT REC
COMMENT Recycling. The ElectraSave Company supports environmentally sound and cost-effective recycling of mercury-containing lamps.

(Insert any available information about the amount and cost of recycling currently being arranged by your company and any difficulties being experienced.) However, we believe that controls on the recycling process itself and on the quality and use of reclaimed products is necessary. Again, as significant handlers of this waste stream, we remain responsible for its downstream management and would like to have some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly. limited to avoid unsafe exposures from downstream reuse processes involving heat, which could cause any mercury contained in the materials to be released.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00301

COMMENTER Minnesota Pollution Control Agency/MOEA

SUBJECT REC

COMMENT 12. Impact on Lighting Upgrades and Energy Efficiency. Lamp recycling represents one to two percent of the total cost of electric lighting. Labor and electricity each represent a much larger portion of total lighting cost. The cost of lamp recycling is minor compared to the energy savings associated with lighting upgrades. The universal waste Proposal was developed to address legitimate concerns of all businesses that

they not become hazardous waste generators solely due to lamps or other Universal wastes. Lamps should be recycled since it is likely that otherwise lamp disposal could cause the release of more mercury than the power plant emissions reduced via energy conservation.

Finally, CE supporters have been promoting on-site lamp crushing by generators. This may make recycling even less competitive with solid waste land filling because recycling facilities charge significantly more to recycle crushed lamps. On the other hand, the net effect of the UW alternative is that recycling costs much less than hazardous waste disposal. Therefore, the private sector will respond rapidly to compete against the hazardous waste disposal option and establish sufficient recycling capacity for those choosing to recycle. Three years ago Minnesota started an aggressive lamp management program which requires businesses to either recycle their lamps or ship them to a hazardous waste disposal facility. Also, enforcement discretion was used to allow for management under "universal" waste-type management standards. When Minnesota started the program, it did not have any lamp recycling capacity. Today three lamp recycling facilities exist in Minnesota with a combined capacity of more than 30 million lamps/year (three times Minnesota's lamp generation rate of 10 million lamps/year). Based upon discussions with the owners and operators of these facilities, we believe that the private sector would respond similarly nationwide under a similar regulatory structure.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-00302

COMMENTER Conserve Electric Company, Inc.

SUBJECT REC

COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a worthwhile goal, in our view, EPA regulation of lamp disposal should assure that a variety of safe and cost effective options are available for the disposition of spent lamps, at least until a national recycling structure is in place.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous

waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00302
COMMENTER Conserve Electric Company, Inc.
SUBJECT REC
COMMENT The Conserve Electric Company, Inc. supports environmentally sound and cost-effective recycling of mercury-containing lamps. However, we believe that controls on the recycling process itself and on the quality and use of reclaimed products is necessary. Again, as handlers of this waste stream, we remain responsible for its downstream management and would like to have some assurance that recycling and reuse practices are safe. We recommend that controls be imposed on air emissions of mercury during the recycling process and that the OSHA workplace standard for mercury be applied. We also believe that the levels of mercury allowed in materials recovered from lamps be strictly limited to avoid unsafe exposures from downstream reuse processes involving heat, which could cause any mercury contained in the materials to be released.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00303

COMMENTER IllumElex Corporation
SUBJECT REC
COMMENT As a member of the EPA Green Lights program, IllumElex supports environmentally sound and cost effective recycling of mercury lamps. But these processes must be safe. We recommend that controls be established on air emissions during the recycling process and that the OSHA workplace standards for mercury be applied.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00304
COMMENTER A&K Service Corporation
SUBJECT REC
COMMENT It is clear to A&K that it is the goal of the EPA to encourage recycling of these lamps. The underlying problems from that noble effort is the lack of a national recycling infrastructure. Until this infrastructure could be implemented the EPA should offer a variety of alternatives for the disposition of spent lamps.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00305
COMMENTER Sierra Club National Solid Waste Comm.
SUBJECT REC
COMMENT A significant adverse effect of the conditional exclusion option would be the impact on recycling of waste lamps. Under this option, cheaper disposal in municipal landfills would be chosen over sending lamps to recycling facilities. Recovery of mercury for reuse must be considered the preferred management option, since all others have the potential for eventual release of the mercury into the environment. Regulations should promote this option. Savings in the costs of electricity will provide adequate incentives for the Green Light program.
RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00306
COMMENTER Lighting Maintenance and Service, Inc.
SUBJECT REC
COMMENT The goal of the universal waste rule seems to be to encourage recycling of mercury containing lamps. Although we believe this to be a worthwhile goal, we feel EPA regulations should assure a variety of safe and affordable options for lamp disposal until a national recycling infrastructure is in place.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00306
COMMENTER Lighting Maintenance and Service, Inc.
SUBJECT REC
COMMENT LMS firmly supports environmentally sound and cost-effective recycling of mercury-containing lamps. We also support controls on the recycling process and on the quality use of reclaimed products. As we are responsible for it, downstream management would like assurance that the recycling and reuse practices are safe. We therefore recommend regulations be enacted on air

emissions of mercury during the recycling process and that OSHA workplace guidelines for mercury be applied.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00308
COMMENTER All-Phase Construction
SUBJECT REC
COMMENT All-Phase supports environmentally sound and cost effective recycling as a viable solution. We believe government resources and efforts would be best channeled at making this a practical alternative.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-00309
COMMENTER Bethlehem Apparatus Company
SUBJECT REC
COMMENT III. FOSTERING THE GOALS OF RCRA - THE LONG TERM VIEW OF MERCURY RECYCLING

The regulatory status of Lamps must be consistent with and should be guided by one of the fundamental goals of RCRA, to foster recovery of materials, particularly hazardous waste materials. As EPA recognized in its discussion of the universal Waste Proposal: The objectives of this [Act] are to promote the protection of health and the environment and to conserve valuable material and energy the land disposal of hazardous waste by encouraging process substitution, materials recovery,

properly conducted recycling and reuse, and treatment 42 U.S.C. ' 6902(a)(6), as reprinted in 58 F.R. 8,102, 8,104 (1993) ("Universal waste Proposal') (emphasis added). With this fundamental goal in mind, EPA must consider the Option which best fulfills the purpose of the statute. In formulating the Universal waste Proposal, EPA identified three components of this fundamental goal: (1) encourage resource conservation, while ensuring adequate protection of human health and environment; (2) improve implementation of the current Subtitle C hazardous waste regulatory program; and (3) provide incentives for individuals and organizations to collect the unregulated portion of these universal waste streams and manage them using the same system developed for the regulated portion, thereby removing them from the municipal waste stream and minimizing their input of hazardous constituents to municipal waste landfills and incinerators. Universal waste Proposal at 8,105. These component goals should be applied to any and all wastes, including the Lamps, which EPA is considering removing from the full burden of RCRA Subtitle C regulation.

RESPONSE

The Agency appreciates the views of this commenter.

DCN FLEP-L0005

COMMENTER Massachusetts Energy Efficiency Council

SUBJECT REC

COMMENT Fourth, we suggest that the EPA encourage recycling of spent lamps. Over the long term, we believe that it is better to remove as much mercury from the waste stream as possible. Also, the Massachusetts Department of Environmental Protection and other state environmental agencies are organizing their regulatory systems around a recycling goal. From industry's standpoint, close coordination of federal and state priorities is highly desirable. In addition, we urge the EPA to establish regulatory requirements for recycling facilities and for the subsequent use of recycled materials.

RESPONSE

The Agency appreciates the views of this commenter. The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled

products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN SCSP-L0009
COMMENTER National Electric Manufacturers Assn.
SUBJECT REC
COMMENT NEMA believes that although the recycling/reclamation of lamps containing mercury still raises many questions, we support recycling/reclamation when conducted in an environmentally sound manner. Since several mercury reclaimers are on the Superfund National Priorities List, there is a demonstrated need for proper licensing and regulation of these recycling/reclamation facilities. At this time, however, no national recycling/reclamation infrastructure exists, making it crucial that we not establish recycling/reclamation as a stand-alone option for the management of spent lamps containing mercury.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN SCSP-L0009
COMMENTER National Electric Manufacturers Assn.
SUBJECT REC
COMMENT NEMA believes that the nation's environmental and energy goals are best served by removing impediments to re-lamping programs. Recycling/reclamation is a laudable goal and one that NEMA wholeheartedly supports if implemented in an environmentally sound and cost-effective manner which competes fairly in the marketplace with other environmentally sound alternatives.
RESPONSE
The Agency appreciates the views of this commenter.

DCN SCSP-L0009
COMMENTER National Electric Manufacturers Assn.
SUBJECT REC
COMMENT Comment: Recycling/Reclamation of lamp components should be encouraged and recycling technologies are available. Response: NEMA strongly supports environmentally sound recycling/reclamation but believes it is important to recognize that the U.S. experience with mercury recycling/reclamation has been very mixed. The RTI report cites many examples of serious environmental problems at mercury recyclers/reclaimers. EPA should be sure that the risks are understood and controlled before creating strong incentives to recycle or reclaim. NEMA disagrees with statements that recycling/reclamation is currently available in the U.S. today. First, less than 10 percent of the states have any recycling/reclamation capacity. Second, because of certain state laws, some recyclers/reclaimers cannot accept lamps from other states. Finally, the existing recycling/reclamation facilities do not uniformly have the capability to fully reclaim and recycle the mercury. Many of the facilities dispose of the phosphor powder in Subtitle C landfills, or must send the collected mercury for further processing before it is a usable product. The economic values of the recovered materials is virtually nil [3] [Footnote 3: The

total value of the recovered material is on the order of half a cent to one cent per lamp. NEMA estimates that recycling/reclamation costs $0.51 to $0.56 per lamp (NEMA Report).] To our knowledge, no review has been done of the uses of the end products of recycling/reclamation and the environmental safety and health risks associated with reuse of the components in the United States. For example, the glass from some operations probably should not be used for food packaging purposes because of mercury contamination and it should not be heated in glass furnaces without mercury controls. In addition, NEMA is concerned that economically marginal and under-regulated recycling/reclamation operations may eventually be abandoned, saddling industry with clean-up costs in the future. Many states exempt recycling/reclamation from any permitting requirements, thus failing to protect the public from long-term environmental degradation by requiring financial assurance and other measures. Further, the lamp industry does not believe that material from some recyclers/reclaimers is of sufficient purity or can be supplied in consistent and large enough quantities to ever be considered a viable supply of raw material for the manufacture of lamps containing mercury.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-L0012
COMMENTER Navajo Tribal Utility Authority
SUBJECT REC
COMMENT While the Navajo Tribal Utility Authority supports recycling in

most cases, recycling is not the solution for management of all spent lamps. Given the remote location of most of the customers of the Navajo Tribal Utility Authority, and the distance from appropriately equipped recycling operations, the regulation would create an unfair and extremely expensive burden on a rural utility such as the Navajo Tribal Utility Authority. Qualified municipal solid waste landfills operating under the new municipal standards are equipped with liners and collection systems, which would provide greater protection of the human health and environment than many recycling centers.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. As explained in today=s preamble, the Agency also has concern about the potential for long-term releases from municipal solid waste landfills.

DCN FLEP-L0013

COMMENTER Osram Sylvania

SUBJECT REC

COMMENT The over-emphasis on recycling and the limitations on crushing and landfilling contained in the current Universal waste rule, will result in increased disposal costs and increased mercury releases compared with other management scenarios. This is because no account is taken of the mercury contamination of the residuals of recycling. When the EPA draft test method 3052 is applied to lamp glass an average of 1.5 mg residual mercury per 4 ft. lamp can be expected for the most commonly used lamps. This far exceeds the emissions shown on any available data from landfilling. We have not investigated the mercury content of other recovered components, such as metals or phosphor. Some recyclers do not process the phosphor, which contains approximately 80% of the original mercury dose.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@

facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-L0014
COMMENTER General Electric
SUBJECT REC
COMMENT Some within and outside EPA have suggested an exclusion could potentially be issued only for lamps that are destined for recycling. We do not believe an exclusion crafted this way would solve many of the restrictive problems with either full Subtitle C or Universal waste. In particular, EPA would be required to clearly define what constitutes and what does not constitute recycling. Many reclamation facilities currently crush lamps and extract mercury and then ship the mercury tied up in either phosphor powder or carbon filters to a retorting facility for final recovery. Under RCRA, these facilities are performing treatment not recycling and under a "recycling exclusion" would be required to obtain a full Part B permit. In addition, it is not clear in the long run whether recycling is the preferred environmental alternative for mercury in lamps. As we work toward reducing the amount of mercury used in manufacturing and products, the need to recover mercury will also decrease. An exclusion that so strongly favors mercury recycling leaves no flexibility for this shift in priorities. At the same time, even with an exclusion, States that want to encourage recycling can always adopt mandatory recycling laws for lamps or ban lamps from incineration or landfills. Many States have taken this approach with batteries, tires, and other special materials in situations where good recycling alternatives are available and that States believes the recycling alternative is more environmentally desirable. States would have complete flexibility to implement these requirements based on local situations and could tailor for conditions to types of generators, number of lamps, or type of destination facilities.

RESPONSE
The Agency is not promulgating an exclusion for hazardous waste lamps conditional on recycling. Based in part upon additional analyses of the behavior of mercury in the environment, the Agency decided to amend the universal waste management standards (40 CFR Part 273) to include hazardous waste lamps within the scope of the rule. The universal waste rule provides a reduced, or streamlined set of requirements that are less stringent than full Subtitle C regulations.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

Under the universal waste approach, individual states may have more stringent requirements for the management of hazardous waste lamps including mandatory recycling laws.

DCN FLEP-L0014
COMMENTER General Electric
SUBJECT REC
COMMENT Benefits to Reclaimers. We believe there are advantages in this approach not only for GE Lighting and lamp generators, but also for lamp reclamation companies. For reclamation companies, the exclusion does the following: It lifts the LDR Restrictions from their recovered product and residuals. Under the current system or under Universal waste, residuals from reclamation facilities that are used in a manner constituting disposal (e.g., as road bed or as ground- applied reflector paint) must pass TCLP and must meet the more stringent universal treatment standards which, for mercury and lead, are far lower than the TCLP values. Reclaimers would also need to test residuals on a regular basis for a large number of other underlying constituents since lamps contain many different chemical constituents in small amounts. In addition, reclaimers today may dispose of certain residuals including phosphor powder. Again, under Universal waste, these residuals would need to meet the land disposal restriction universal treatment standards for all underlying constituents. Such a restriction would be lifted, potentially reducing reclamation costs and increasing product options. The exclusion also allows reclamation facilities to store lamps on site without obtaining a permit, a significant benefit for large volume reclamation facilities. A permit would be required under either full Subtitle C or a Universal waste system. Reclaimers would be allowed to ship reclaimed lamp products in ways

similar to new product without worrying about DOT requirements (while Universal waste waives RCRA transportation requirements, we have heard that some State DOTs may honor it.) Allows reclaimers to perform treatment to remove mercury for further reclamation and recovery without the need to get a treatment permit. Many recyclers do not do on-site retorting. They are really treating the materials and would require a full RCRA permit, and be subject to corrective action and financial assurance requirements. We do not believe the approach we are suggesting would restrict lamp reclaimers' current markets. Lamp reclamation facilities are generally located in densely populated States and localities. In addition, many are located in States with high incineration rates. These areas tend to have strong recycling goals and objectives which would not be affected by our approach. Existing regional and local pressure to recycle lamps would continue and companies with current recycling goals are not likely to change them. Also, several States already have strong laws and regulations favoring recycling which would be unaffected by our approach. In fact, under an exclusion, lamp reclamation companies could expand their markets by offering new services including mobile treatment, which would be precluded under Universal wastes. Reclamation companies could offer crushing and mercury extraction services at the generator site and then recover the mercury and any usable residuals. This would significantly reduce the storage and transportation burdens on generators and could therefore be a very lucrative market.

RESPONSE

For the reasons explained in Section III. B of today=s preamble, EPA has concluded that its proposed conditional exclusion is not sufficiently protective of human health and the environment.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid

and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Management costs under the universal waste system approach will be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between mercury lamp generators and collection points or disposal or recycling facilities. EPA notes that neither the universal waste approach nor a conditional exclusion would affect DOT requirements. In addition, handlers of universal waste lamps may accumulate lamps for a longer period of time.

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule for hazardous waste lamps retains the treatment prohibition for universal waste handlers and applies the prohibition to handlers of hazardous waste lamps. The definition of treatment under RCRA includes Aany method, technique, or process...designed to change the physical, chemical, or biological character or composition of any hazardous waste, so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.@ The crushing of hazardous waste lamps clearly falls within the definition of treatment under RCRA (40 CFR 260.10).

Some commenters to the proposed spent mercury-containing lamps rule requested that the Agency allow generators of such lamps to crush them on-site before sending them off-site for treatment or disposal. However, as explained in the preamble to the final universal waste rule (60 **FR** 25519), the Agency believes that it is not appropriate to allow universal waste handlers to treat universal wastes because the handlers are not required to comply with the Subtitle C hazardous waste management standards for generators (40 CFR Part 262). These hazardous waste generators must obtain EPA identification numbers, are subject to the 90-day (or 180-day) accumulation limit, and must comply with the technical standards of 40 CFR Part 265 for storage and accumulation units. Because these standards are relatively stringent, EPA=s policy is that generators may treat hazardous wastes on-site, provided that they comply with all applicable requirements of 40 CFR Part 262 for storage and accumulation of hazardous wastes.

Universal waste handlers, on the other hand, are allowed a much longer accumulation time limit of one year and need not comply with specific technical standards for accumulation and storage units. Instead, they are subject only to the general performance standard of managing universal wastes in a manner Athat prevents releases@ to the environment. In addition, information available to the Agency on drum top crushing systems for lamps indicates that these units may allow significant air emissions of mercury, particularly when the units are not in operation, and

emissions often may exceed the OSHA limit of 0.05 mg/$m^3$.

For these reasons, the Agency is not allowing crushing of hazardous waste lamps under federal regulations. However, generators located in a state with an authorized universal waste program may be allowed to crush, universal waste lamps, if within the state authorization process the Agency determines that a state=s program allowing generators to treat lamps under controlled or restricted conditions is equivalent (per RCRA '3006) to the federal prohibition. EPA believes that this approach both ensures protection of human health and the environment while allowing for the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

DCN SCSP-00040
COMMENTER University of Nevada-Reno
SUBJECT REC
COMMENT Fluorescent light bulbs and tubes: EPA proposes to study whether fluorescent tubes pose a risk when managed in landfills. A more legitimate course of action in light of the considers management and recycling provided as justification for this proposed rule is whether these wastes exhibit characteristics and whether the potential for recycling exists. MSDS sheets for fluorescent tubes indicate that significant quantities of mercury, cadmium, and other hazardous constituents are present in fluorescent tubes.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. EPA is aware that flourescent lamps sometimes contain other hazardous constituents, but for these reasons explained in the preamble to today=s rule, the Agency has concluded that these lamps are appropriate for inclusion in the universal waste rule.

DCN SCSP-00118
COMMENTER Robert M. Quintal
SUBJECT REC
COMMENT SUMMARY There are now 7 lamp recycling facilities in operation in the US. There are at least 4 more proposed that are known of. [9] [Reference 9: "Fluorescent Recyclers", Waste Watch Center, Dana Duxbury & Associates - November 1992.] Several of the 7 existing have expressed more than a passing interest in

duplicating recycling facilities in other regions. Based on the experience of the operating facilities, lamp recycling is profitable enough that additional facilities are being considered. It is now up to the EPA and the lamp manufacturers to encourage further development of private businesses to handle this issue. It is evident that the initial inclusion of fluorescent into the proposed "Universal waste rule" spurred further activity on the part of recyclers. The temporary removal of fluorescent has put these private entrepreneurial efforts on indefinite "hold". It would be possible in the short-term to reestablish these activities, however, it would be necessary to promulgate such a rule that would direct the handling of mercury containing electric lamps in a manner other than the existing MSW stream approach.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN SCSP-00131

COMMENTER Monsanto

SUBJECT REC

COMMENT We note that progress has already been made in the European community on recovery of fluorescent tubes from the trash stream. Approximately the same number of fluorescent light bulbs (400 million) are discarded in Europe as in the U.S. each year. Of those discarded, a large percentage are collected and processed. For example, Germany conducts the world's most extensive lamp recycling program, collecting approximately 50 million of the 125 million discarded lamps (40%), of which 35-40 million are recycled. The Nordic Countries discard 35-40 million lamps per year, of which 25-30% are collected and treated (This percentage is expected to grow to 50% by 1994.) The Netherlands requires collection of lamps, classifying them as a chemical/toxic waste, and collects and processes approximately 7 million (45%) of the lamps. Switzerland considers any collection of more than twelve (12) four foot lamps to be hazardous waste, limiting mercury content from landfill leachate to 0.01 mg/liter. About 4 million (40%) of their discarded lamps are processed annually. Austria imposed the same restrictions on lamps as Switzerland, with nearly 4 million (50%) of Austria's lamps collected annually. A similar program in the U.S. would encourage the recycling of these wastes and fulfill one of RCRA's objectives which is to "conserve valuable material and

energy resources" (RCRA section 1003(a)). "Conservation of materials, for example, metals present in some of the universal hazardous wastes, is important not only in RCRA but to the U.S. economy in general." (58 FR 8105)

RESPONSE

The Agency thanks the commenter for providing information on spent lamp recycling programs in other countries. Today's final rule will facilitate the environmentally-sound collection and the proper recycling or treatment of spent mercury-containing lamps. Based on the belief that less complex regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Generators have several options with regard to waste management, but the ability to access large quantities of universal waste from central collection centers may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00202
COMMENTER Union Camp Corporation
SUBJECT REC
COMMENT An underlying goal of the universal waste rule appears to be to encourage the recycling of mercury-containing lamps. While this is a laudable goal, it has been our experience that there are currently too few recycling facilities in operation to make the Universal waste approach feasible nationwide. In UCC's view, EPA's regulation of lamp disposal should assure that a variety of safe and cost-effective options are available for the disposition of spent lamps, at least until a national recycling infrastructure is in place.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

DCN FLEP-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT REC
COMMENT Appropriate regulatory controls for recycling facilities should also be considered with regard to air emissions, OSHA workplace standards and the levels of mercury allowed in residual materials. Such controls should not, however, be so burdensome

as to be a disincentive for cost-effective recycling.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00063

COMMENTER American Waste Management, Inc.

SUBJECT REC

COMMENT If spent fluorescent lamp waste is landfilled, the mercury will inevitably escape since no landfill can maintain it's integrity in the planning horizon of geologic time it is not a question of whether the mercury will escape, instead it is a question of when it will escape and in what form. Land disposal of metallic wastes only postpones dealing with the materials in a responsible manner. Many of the materials now being lawfully interred in landfills will require exhumation and processing for recovery and/or detoxification in the future. It would be far more cost effective to recycle spent fluorescent mercury vapor lamp wastes prior to land disposal, rather than landfill now as a temporary industrial and municipal cost cutting expedient, when clearly in the fullness of time, landfill mining to remove these toxic and/or valuable-materials will be required. Additionally, groundwater decontamination and perhaps other expensive remedial measures may be required at that time.

RESPONSE

The Agency appreciates the views of this commenter.

DCN FLEP-00191

COMMENTER Utility Solid Waste Activities Group

SUBJECT REC

COMMENT Perhaps of more concern is the fact that certain recycling operations may not be fully adequately protective of human health and the environment. Indeed, one case study in the RTI Report demonstrates that "mercury recovery facilities can have significant negative environmental impacts through poor operating practices and inadequate emission controls. The concentration of mercury-bearing wastes at such facilities makes adequate oversight of their design and operations a necessity for protection of human health and the environment." RTI Report at 139-140, 176 [12] [Footnote 12: In one case study cited in the RTI Report, it was "not clear EPA where the mercury was ending up in the process. Id. at 139. In another case study, it was found that a retorting operation resulted in "significant mercury contamination in soil, ground water and various biota." Id. at 152.] As EPA's own mercury emissions report indicates, emissions from secondary mercury facilities are on par with emissions from broken mercury-containing lamps. See EPA Emissions Report at 3-11, 3-70. Secondary mercury production is estimated to have accounted for approximately 6.7 Mg (7.4 tons) of mercury emissions in 1991, while annual mercury emissions from breakage of lamps is approximately 8 Mg (8.8 tons). Id. This concern over the environmental performance of the less vigilant lighting waste recyclers is especially relevant as more states implement "recycling exclusions" from hazardous waste regulation and a plethora of lighting waste facilities spring up across the country.

RESPONSE

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used

in a manner constituting disposal.

DCN FLEP-00281
COMMENTER Michigan Dept. of Natural Resources
SUBJECT REC
COMMENT Additionally, information presented to us by GE Lighting indicates that considerably more mercury is lost to the environment through the recycling process than through landfilling. This occurs through the crushing process and the re-melting of the mercury contaminated glass tubes.
RESPONSE
The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00223
COMMENTER Owens-Corning Fiberglass Corporation
SUBJECT REC
COMMENT 5. Finally, it is believed that if the conditional exclusion becomes final, the demand for and mercury containing light fixture reclaim facilities may disappear. This will result in the closing of such facilities, and therefore, the removal of the reclaim disposal option.
RESPONSE
The Agency appreciates the views expressed by this commenter.

DCN FLEP-00272
COMMENTER Detroit Edison Company
SUBJECT REC
COMMENT Detroit Edison fully supports the EPA's overall recycling and

reclamation goals, including its goals to encourage recycling of lighting waste. However, the option of disposal in a municipal waste landfill must remain available. It should be noted that there are very few lighting waste recyclers operating in the U.S. and some of those would not meet Detroit Edison's standards in our effort to avoid future Superfund liability. Further, in addition to the cost of recycling vs. disposal being a waste of resources with little associated environmental benefit, if any, the reality of the significantly increased cost of recycling has and will continue to discourage the accelerated change out of inefficient lighting and the environmental benefits associate with those programs. Detroit Edison's inquiries into possible recycling/reclamation of lighting waste reveals that the cost is between $0.35 and $0.53 per bulb plus transportation.

RESPONSE

Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills. For these reasons discussed in today=s preamble, EPA has concluded that participation in energy efficient lighting programs is not dependent upon regulatory options chosen by the Agency. In addition, the Agency has concerns about the potential for long-term rules from municipal solid waste landfills.

DCN FLEP-00287

COMMENTER E.F. Friesenhahn

SUBJECT REC

COMMENT Promotion of the EPA's waste hierarchy and recycling agenda.

Allowing lamps to be disposed of at Subtitle D, non-hazardous landfills would be counterproductive for the national focus on effective waste decision-making and the comprehensive recycling agenda. In addition to the obvious hazardous waste constituent, mercury, the remaining components of lamps are glass and aluminum end caps. The EPA should encourage recycling of these materials and the effective recycling of mercury through valid technology.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-00298

COMMENTER New York Power Authority
SUBJECT REC
COMMENT While NYPA supports recycling spent lamps in most cases, it is our opinion that recycling is not always the most environmentally beneficial method of disposal with respect to all lighting waste. It would be impracticable for recyclers to accommodate the enormous volume of spent lamps that would be generated by full participation in relamping programs. Furthermore, all recycling facilities are not managed in the most responsible and adequate manner and, therefore, a number of recycling facilities are not as environmentally, protective as qualified municipal solid waste landfills.
RESPONSE
Although the Agency believes that today=s rule is likely to encourage the recycling of hazardous waste lamps, the rule does not mandate such recycling. Therefore, the Agency was not required to ensure that adequate recycling capacity exists. However, EPA believes that as demand for recycling continues or increases, investment in reclamation facilities will also increase, thus leading to an expansion in capacity. Lamp generators who have concerns about the capacity or effectiveness of particular lamp reclamation facilities may continue to dispose of lamps in Subtitle C landfills.

The Agency also notes that today=s rule does not change any regulatory requirements applicable to destination facilities (i.e., recycling facilities and treatment and disposal facilities). Under today=s rule, those facilities are subject to all Subtitle C management requirements applicable to hazardous waste treatment, storage, and disposal facilities, although the Agency does not regulate the actual process of reclaiming mercury. In addition, recycling facilities (as well as Adownstream@ facilities that reuse the recycled products) must comply with all applicable Clean Air Act requirements, all applicable worker safety standards under the Occupational Safety and Health Administration (OSHA), and all applicable state controls (including possible best management practices or other controls on the recycling process).

Residuals from recovery operations must also be managed in accordance with all applicable solid and hazardous waste management requirements. If residuals exhibit a characteristic of hazardous waste, they must be managed in accordance with all applicable hazardous waste management controls, including the requirements of 40 CFR Subpart C, standards for recyclable materials used in a manner constituting disposal.

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT REC
COMMENT Conditional exclusion - Generators would not likely have their lamps recycled if they can dispose of them as solid waste. This,

in turn, could adversely impact the recycling market. Without adequate safeguards, the exclusion could encourage mismanagement of lamps, tax limited landfill capacity, curb waste minimization efforts, and waste a valuable resource.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-L0001

COMMENTER Environmental Technology Council

SUBJECT REC

COMMENT C. An Exemption for Fluorescent Lamps from Hazardous Waste Regulations Would Greatly Discourage Recycling and Severely Damage the Lamp Recycling Industry Disposal costs for lamps at a Subtitle D solid waste landfill are approximately two to three cents per lamp. [35] [Footnote 35: "Lighting Waste Disposal," p. 10.] This is a small fraction of the cost of recycling (approximately fifty cents per lamp). That is one reason that, although it is presently illegal to dispose of used hazardous fluorescent lamps as municipal solid waste, probably the vast majority of lamps are nevertheless disposed in solid waste landfills and MSW incinerators. An exemption from the hazardous waste regulations would be intended essentially to authorize this presently illegal practice. Such an exemption would reduce or eliminate the recycling market.

RESPONSE

The Agency appreciates the views expressed by this commenter.

DCN FLEP-00256

COMMENTER Ford Motor Company

SUBJECT REC

COMMENT Recycling of Spent Mercury Containing Lamps. Under either option, recycling of lamps would be allowed. The Agency has requested information on current recycling operations and practices. Mercury containing lamps are currently being managed by several national hazardous waste management companies. These waste management companies offer waste generators several lamp management options including: 1) less than truck load shipments on a regularly scheduled basis ("milk run"), and 2) full truck load shipments. The milk run shipments are filled by several waste generators and either transported directly to the reclamation facility or delivered to a consolidation facility. Once a consolidation facility has a full truck load of the spent

lamps, they are shipped to the reclamation facility. The national hazardous waste management companies subcontract the reclamation to two major facilities. Lamps are fed into equipment designed to crush the lamps and capture mercury vapor, control dust, and decontaminate and separate the glass, metal, and phosphor power. Liquid mercury from on-site control and distillation equipment is sold to the scientific hardware, electronic, and lighting industries. Aluminum and brass metal are sold as scrap metal. The glass is sold to glass cullet-brokers who then sell the cullet to the fiberglass, glass bottling, plate glass, and paint industries. Very little lamp cullet is currently being recycled back into specialty glass for mercury-containing lamps. Several lamp manufactures. are aggressively working with cullet dealers to develop better lamp cullet recycling options. The recycling costs for each four foot lamps currently range from $0.40 to $0.70 per tube, not including packaging and material handling costs. Costs for "U" tubes or irregularly-shaped mercury-containing lamps range from $0.80 to $2.00 per tube. High intensity mercury-containing lamp recycling costs range from $3.00 to $6.00 per bulb. These prices typically include transportation from the waste generator to the consolidation and/or reclamation facility. Considering that "brand name" 4-foot fluorescent tubes typically cost $1.00 to $1.25 new at retail, it is unrealistic to expect significant voluntary bulb recycling under the current cost structure without significant regulatory relief (such as via lamp crushing) discussed below.

RESPONSE

Although EPA has determined that spent hazardous waste lamps can safely be subject to management requirements that are less stringent than those of full Subtitle C, the Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. It is clear to the Agency that mercury poses an environmental threat and that man-made sources of mercury emissions should be reduced, or, where inevitable, managed properly. EPA therefore gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. The Agency is convinced that the universal waste approach is the best way to further these goals. EPA agrees with those commenters to the proposed rule who stated that the conditional exclusion approach would reduce the quantities of spent hazardous waste lamps that would be recycled, increase disposal of lamps in municipal landfills, and increase the amount of mercury released to the environment due to increased breakage of lamps during storage, transport, and landfilling. The Agency-s analysis predicts that uncontrolled mercury emissions under the conditional exclusion approach are likely to be somewhat greater than under

the universal waste approach promulgated in today=s rule.

A principal reason for this conclusion is that some substantive and relatively detailed controls for managing spent hazardous waste lamps are necessary for protection of human health and the environment, although these controls can be structured in a much more simplified and streamlined way than the full Subtitle C management system. The Agency believes that such controls would be difficult to implement and to enforce using a conditional exclusion approach. Such an approach could be appropriate if the regulated universe was less numerous and varied, or more sophisticated about Subtitle C requirements. However, since handlers of spent hazardous waste lamps are widely varied, diffuse, and often not knowledgeable about RCRA regulations, it would be very difficult to monitor compliance and enforce controls such as those included in today=s rule if these handlers were completely outside of the Subtitle C universe and the controls were implemented only as conditions for maintaining the exclusion. The Agency believes that the packaging standards and prohibition on treatment included in today=s rule are important for preventing potential mercury emissions during storage and transport. Controls of this type can best be implemented through a universal waste-type approach where handlers are operating within a simple, streamlined management system with some limited oversight rather than completely outside of any regulatory structure.

A further reason for today=s rule finalizing the universal waste approach is that his approach will provide more consistency between federal and state regulations governing the management of spent hazardous waste lamps. Currently, several states have added hazardous waste lamps to their universal waste programs and others have proposed to do so in the near future. By placing hazardous waste lamps within the federal universal waste rule, EPA hopes to encourage additional states to regulate spent lamps as universal waste and therefore promote greater consistency in regulatory approaches across state borders. This will improve waste management efficiency and reduce compliance costs for waste handlers engaged in interstate commerce.

DCN FLEP-00115
COMMENTER American Textile Manufacturers Institute
SUBJECT REC
COMMENT ATMI member companies are committed to reducing potential risks to human health and the environment - both in our plants and in our communities. We also are committed to remaining a viable and competitive U.S. industry. To meet these objectives, EPA must balance our interests and those of the nation as a whole in preserving and protecting America's natural resources and its economic viability and vitality. With those objectives in mind, ATMI strongly urges EPA to exempt mercury containing lamps from hazardous waste regulation and encourages the Agency to continue to monitor the situation. Should EPA later conclude that disposal in a landfill is dangerous, the Agency should consider

instituting a disposal program for mercury-containing lamps similar to the lead acid battery program. This approach would take the tubes out of the landfill and consolidate the transportation, thus reducing transportation costs and total disposal costs to a reasonable level. Second, the regulation would require retailers, suppliers, wholesalers, etc. to accept spent tubes for every new tube sold. These parties would be made responsible for proper recycling and disposal. This would cover industrial and homeowner users and eliminate the hazardous waste paperwork at the source. It is critical that the Agency consider the economic impact which the rule, specifically the universal waste management option, will have on our industry and others if finalized. EPA should conduct a cost/benefit analysis of its proposed options and then take a second look at the environmental and economic consequences of its proposed rule. Finally, EPA should also promote the establishment of additional recycling centers across the United States.

RESPONSE

For these reasons explained in Section III. B of today=s preamble, EPA has concluded that its proposed conditional exclusion is not sufficiently protective of human health and the environment.

DCN SCSP-00199

COMMENTER Minnesota Office of Waste Management

SUBJECT REC

As measured in Minnesota lamp recycling facilities, broken lamps release significant amounts of mercury. The recycling facilities are equipped to handle broken lamps, but landfills and landfill operators are not so equipped.

Lamp Recycling and Mercury Reclamation

There are a number of fluorescent lamp recycling technologies available or under development. Two facilities, utilizing different dry crushing technologies, are located in Minnesota and have been operating for several months. One facility uses the MRT technology which was developed in Sweden and has been used on a commercial scale for nearly a decade. The other facility uses a different technology developed by Mercury Technologies of California and refined here.

Both of these facilities, and others around the world, have demonstrated that it is technologically and economically feasible to recycle fluorescent lamps and recover 99.9% of the mercury, in a manner that meets or exceeds OSHA requirements for worker safety.

Based on industry figures, we estimate that the cost of lamp recycling is about two percent of the total cost of electric lighting. The costs of the lamp, installation, removal, and the electricity used are each greater than the recycling cost. The recycling cost is minuscule

compared to the savings realized by using fluorescent. The addition of recycling costs barely alters the return on investment or payback period for an investment in energy efficient lighting.

RESPONSE

The Agency thanks the commenter for the additional information regarding developing recycling technology.