DCN SCSP-00014
COMMENTER Miles, Inc.
SUBJECT UNWAS6
COMMENT The imposition of certain minimum standards for storage and transportation would be appropriate to be included in the regulations.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Universal waste handlers must store hazardous waste lamps in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00031
COMMENTER Potomac Electric Power Co.
SUBJECT UNWAS6
COMMENT Pepco also strongly supports the ability of generators to engage in materials separation and consolidation (e.g., crushing) of spent lamps in an environmentally sound manner. We believe that such activities are often necessary to facilitate storage and transportation and can be performed safely under appropriate conditions and in compliance with existing environmental and safety standards. Nonetheless, as long as lighting wastes remain under the purview of Subtitle C regulation, such activities may be viewed as "treatment," thus requiring a Subtitle C permit.

This will only serve to increase compliance costs and further prohibit participation in relamping programs.

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 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 hazardous waste 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- 00041
COMMENTER John A. Williams
SUBJECT UNWAS6
COMMENT Section 273.31 (e)(2) - Prohibited from treating them. Generators of hazardous waste lamps may crush for volume reduction as long as the machine complies with air quality regulations for mercury and except by responding to releases as provided in paragraph (f)(2) of this section; and includes: (I) The fluorescent lamps must originate from relamping activities at the facility. (ii) No lamps may be transported or received from off site facilities. (iii) The mercury contaminated filters must be used and replaced as directed by the manufacturer. The spent filters may be tested for toxicity characteristic leaching procedure (TCLP) for mercury (D009) or apply generator knowledge. If the TCLP for mercury exceeds the regulatory level of 0.2 ppm, the spent filters must be manifested as hazardous waste for either recycling or disposal. (iv) The crushed lamps in containers, if determined to be characteristically hazardous for mercury (D009), must comply with the following: a. Closed at all times except when adding or removing materials from the container. b. The containers must be marked or labeled as hazardous waste. c. Marked with the accumulation start date, comply with the 90 or 180 day storage time (depending on the generator's status). d. Manifested as a hazardous waste for either recycling or disposal. (v) The fluorescent lamp crusher must be operated in a manners consistent with all State and Federal rules and regulations applicable to this process; and "An EPA headquarters memo dated June 17, 1986, indicates that on-site treatment of waste in a container is permissible by the generator without obtaining a permit. I do not support crushing of fluorescent lamps by the transporter or consolidation point unless the facility has a treatment, storage or disposal (TSD) permit."
RESPONSE
The Agency appreciates the commenter=s suggestions on proper management and treatment of hazardous waste lamps. Today=s final rulemaking adds hazardous waste lamps to the universal waste regulations under Part 273. 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 hazardous waste 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-00053
COMMENTER Occidental Chemical Corporation
SUBJECT UNWAS6
COMMENT The economic impact between the two options can become quite significant. Although the proposed standards for mercury-containing lamps set forth in Option 2 provide more comprehensive management standards, the overall impact on protection of human health and the environment is the same. Even

if Option 2 were adopted, the potential for mercury releases from lamps would not necessarily be minimized, as would be the case under Option 1.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency does not agree with the commenter that the potential for mercury releases from lamps would not be minimized if hazardous waste lamps are included under the universal waste regulations. The universal waste rule provides a format for controlling the management of spent lamps during storage and transport. The universal waste rule provides packaging and labeling standards for spent lamps These standards require that universal waste handlers manage hazardous waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Handlers must store hazardous waste lamps in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272. The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport.

A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase. The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely

independent of the regulatory options chosen by EPA.

DCN FLEP-00059
COMMENTER Connecticut Dept. of Env. Protection
SUBJECT UNWAS6
COMMENT c) Include packaging standards as appropriate to minimize lamp breakage. d) Include management standards as appropriate to minimize mercury emissions during waste lamp storage and transportation. This should include appropriate enclosed container requirements to hold lamps inadvertently broken. e) Maintain a prohibition on waste treatment (which includes lamp crushing).
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Handlers must store hazardous waste lamps in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

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).

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 (i.e., generators cannot treat universal wastes without obtaining a permit for the treatment activities). 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-00071
COMMENTER Sterling Environmental Services, Inc.
SUBJECT UNWAS6
COMMENT Comment was also requested on the prohibition of intentional breakage of bulbs. The generators that crush bulbs seem to be doing it as a cost savings for disposal. The issue of mercury exposure from crushing the bulbs has typically been addressed by OSHA standards. Many generators have installed mercury capturing devices for fugitive mercury emissions.
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 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 hazardous waste 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-00077
COMMENTER U.S. Department of Energy
SUBJECT UNWAS6
COMMENT Proposed 40 CFR 273.2(b) Demonstration that Special Collection System Regulations Improve Waste Management Practices (1)The risk posed by the hazardous waste during storage and transport is relatively low, and special collection system regulations can be developed that are protective of human health and the environment; There are several problems posed by fluorescent lamps during storage and transport; however, the problems are the same whether they are managed under strict Subtitle C regulations or under the reduced regulatory scheme of 40 CFR 273. The lamps are not immune to breakage during removal from the fixture, packaging, transport from the point of generation to a storage area, or during transport to recycling, treatment, or disposal facilities. These problems can be minimized by careful handling and appropriate packaging. At the point of generation, (i.e., the light fixture), fluorescent lamps are typically placed in the same cardboard boxes used when shipped as products. Generally, the new fluorescent lamp is removed from the cardboard box and the empty slot is filled by the discarded lamp. Upon completely filling a cardboard box with discarded lamps, the box ends are taped and the box is marked with words that identify the contents. If cardboard boxes are unavailable, the lamps are typically wrapped in plastic and the plastic is taped closed; this arrangement meets the definition of closed container. This makeshift container is then marked with words that identify the contents. In addition to mercury, fluorescent

lamps may contain hazardous materials such as antimony and manganese which have established workplace exposure limits. According to one lighting manufacturer, the air concentration caused as a result of breaking one or a small number of fluorescent lamps should result in no significant exposure to the individual. The health and safety implications are not clear if large quantities of fluorescent lamps are broken during packaging or transport. An additional concern would be risk to individuals changing or packaging these lamps from broken glass. It is generally expected that these problems can be minimized by careful handling and placement of lamps in appropriate packaging. It is anticipated that incandescent and high-intensity discharge lamps would be subject to breakage as well during removal from the fixture, packaging, transport from the point of generation to the storage area, or during transport to recycling, treatment, or disposal facilities. Information is not known regarding mercury exposures due to breakage of certain types of high-intensity discharge lamps and this would not be a concern for incandescent lamps. Concerns would include risk to individuals changing or packaging these lamps from broken glass. Again, these problems can be minimized by careful handling and appropriate packaging. Since transporters must comply with all applicable DOT regulations governing the transport of these wastes, initial storage of discarded lamps in DOT approved containers would seem to be a reasonable approach and would eliminate additional repackaging , steps. As an alternative, the fluorescent lamps could be placed in the original cardboard boxes and overpacked in a strong tight container. Bubble-type packing could also be utilized to fill any void space in order to minimize breakage. This type of arrangement would afford a high degree of protection since the cardboard boxes were designed for product shipments (with minimal breakage) and the over pack would provide an acceptable level of leak-tightness. Instead of specific packaging requirements for hazardous fluorescent, incandescent, or high-intensity discharge lamps, or requirements that the lamps be in a specific physical condition (e.g. intact), EPA could propose a general performance standard that requires generators and other handlers to manage the lamps in a manner that minimizes releases of any lamp components. This requirement would be analogous to the requirement proposed for management of hazardous waste batteries under 40 CFR 273 and would allow some flexibility in selection of packages.

Fluorescent, incandescent, and high-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(b)(1) (i.e., that the risk posed by the hazardous waste during storage and transport is relatively low, and that special collection system regulations can be developed that are protective of human health and the environment).

RESPONSE

The Agency appreciates the commenter=s extensive suggestions on managing hazardous waste lamps to minimize breakage. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e.,universal waste rule is less stringent than full Subtitle C management standards). The Agency has determined that hazardous waste lamps meet most of the criteria established for designating a material as universal waste.

The universal waste standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Today=s final rule does not specify particular types of packaging for the storage and transport of lamps. Today=s rule requires that hazardous waste lamps be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions or the release of any other hazardous constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN SCSP-00077
COMMENTER U.S. Department of Energy
SUBJECT UNWAS6
COMMENT (2) Systems to be used for collection of the waste (including packaging, marking, and labeling practices) would ensure close

stewardship of the waste; The packaging suggestions offered above under proposed 40 CFR 273.2(b)(1) criteria would provide for close stewardship of the waste and could easily be marked with the appropriate DOT description. An additional warning label could be placed on the package to indicate it may contain broken glass. As an alternative, fluorescent, incandescent, and high-intensity discharge lamps would be excellent candidates for hazardous wastes which could be managed in a "reverse distribution system" supervised by the original product manufacturer. Under this approach, the lamps would be exempt under the 40 CFR 273 regulations. This approach could work for either unused lamps returned from end-users and/or retailers or for used lamps returned from end-users. Based on information from a manufacturer for used fluorescent lamps, aluminum bases can be recycled; lead, glass, and metal parts from the flare ends can be recycled, and mercury can be recovered. Older cadmium-containing lamps can be processed in a manner that recovers the cadmium. This system would provide a recycle opportunity for the industry that would benefit the most from the materials, i.e, the lighting manufacturers.
Fluorescent, incandescent, and high-intensity discharge lamps generally meet the proposed criteria of 40 CFR 273.2(b)(2). Systems to be used for collection of the waste (including packaging, marking, and labeling practices) would ensure close stewardship of the waste.

RESPONSE

The Agency appreciates the commenter=s suggestions for marking and labeling hazardous waste lamps. Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic for mercury or any other hazardous constituent fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to Subtitle C regulation or universal waste management regulations. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The commenter suggests a Areverse distribution system@ for returning used or unused lamps to retailers. EPA cannot require a manufacturer or retailer to accept new or spent lamps under the

statutory authority of RCRA. Today's final rule may facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. This is based on the belief that less complex and less costly regulations will increase the collection of universal wastes and may encourage the development of safe and effective methods to recycle universal waste.

DCN FLEP-00078
COMMENTER Tennessee Valley Authority
SUBJECT UNWAS6
COMMENT Concerns with the Proposal Onsite lamp crushers - Regardless of which regulatory option EPA chooses, qualified onsite lamp crushing should not be considered hazardous waste treatment. We believe that onsite lamp crushing can be a safe, cost effective alternative to shipping the uncrushed lamps. Because of problems created by lamp breakage during shipping, shipping lamps whole can present more risk to health and safety and the environment than shipping crushed lamps. For the last couple of years TVA has monitored operator mercury exposure from fluorescent bulb crushing. We have tested and found that commercially available crushers with vapor and dust collection systems emit very little mercury if operated correctly and do not exceed OSHA permissible exposure limits.
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 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 hazardous waste 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-00078
COMMENTER Tennessee Valley Authority
SUBJECT UNWAS6
COMMENT Storage, handling, and record keeping - The storage, handling, and record keeping requirements under the conditional exclusion and the universal waste options are unclear. To avoid unnecessary administrative costs, we believe generators should be allowed flexibility in how lighting wastes are stored, consolidated, and accounted for. Our experience indicates that routine lamp replacement is an ongoing activity and not a "batch" activity as EPA suggests. Requiring generators to maintain shipping records for lighting wastes that are not hazardous waste is an unnecessary administrative burden.
RESPONSE
The Agency agrees with the commenter that there should be flexibility in the management of hazardous waste lamps to avoid unnecessary costs. Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent

breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

Under the universal waste system, manifests are not required for lamp shipments between hazardous waste lamp handlers and disposal or recycling facilities. The Agency has decided to retain the current tracking requirements in Part 273 for hazardous waste lamps. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps. The Agency believes that the retention of basic records to track off-site shipments of universal waste lamps will facilitate compliance with the requirements of the final rule and will ensure that spent hazardous waste lamps are managed at appropriate off-site facilities (e.g., recycling facilities and/or other permitted hazardous waste management facilities).

DCN FLEP-00082
COMMENTER Square D Company
SUBJECT UNWAS6
COMMENT Comments on the Universal Waste Proposal. The proposed Universal Waste approach would not solve the current problems associated with lamp disposal. The goal of removing the stigma associated with hazardous waste would not be achieved, and it may actually work to increase risks by encouraging the accumulation of very large quantities of intact lamps, and by increasing the opportunities for and magnitude of environmental problems. It would also continue to keep costs of lamp replacement very high. The Universal Waste approach was not designed for fragile wastes whose risks derive from air emissions due to breakage. Rather, it was designed for wastes that could withstand the rigors of large scale accumulation and transport. We are particularly

concerned about the lack of regulatory requirements for Consolidation Points and we are unlikely to send our spent lamps to them due to liability concerns.

RESPONSE

Currently, under RCRA Subtitle C, a solid waste that exhibits the characteristic of toxicity as set forth in 40 CFR 261.24 must be managed as hazardous waste and is subject to full record keeping, storage, notification and transportation requirements. Many types of lamps consistently fail the toxicity characteristic test for mercury and some fail for lead and therefore, are subject to the full RCRA Subtitle C management standards.

By adding hazardous waste lamps to the universal waste program, the complexity of managing this type of waste is significantly decreased, because the universal waste rule provides a reduced set of requirements (i.e. the universal waste rule is less stringent than full Subtitle C management standards). The transportation, accumulation, notification and record keeping requirements are less stringent than those in the RCRA Subtitle C management program.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule may facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex and less costly regulations will increase the collection of universal wastes, 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 current universal waste regulations, generators of universal waste and facilities that consolidate but do not treat or dispose universal waste are subject to the requirements for universal waste handlers. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the specific applicable management requirements under RCRA.

Finally, the commenter expresses concern over regulatory requirements for Consolidation Points. The final rule for hazardous waste lamps does not contain a separate category for consolidation points. When the final universal waste rule was published, the Agency modified the four categories. The transporter and destination facility categories were retained essentially as proposed. However, the persons who would have been included in the generator and consolidation point categories were merged to create two new categories of participants: small quantity handlers of universal waste (SQHUWs) and large quantity handlers of universal waste (LQHUWs). In the hazardous waste lamps final rule, the Agency has decided to remain consistent with the existing universal waste regulations and retain the four categories of participants that were finalized in the universal waste rule. Consolidators would be subject to the standards for universal waste handlers. It should be noted that handlers may choose to send his universal waste directory to a destination facility if they so desire.

DCN FLEP-00090
COMMENTER The Boeing Company
SUBJECT UNWAS6
COMMENT Management controls to minimize lamp breakage. We do not support the proposed requirement that generators must at all times manage hazardous waste lamps in a way that minimizes lamp breakage. In order to promote the efficiency of waste management activities, some generators invest in devices such as a fluorescent lamp tube disposer. This device is designed for efficient use of drum space during accumulation and transportation. The entire process is conducted in a controlled environment. The lamp is crushed while being dropped into the drum. The unit is equipped with an electric blower and filter bag to trap powder and dust, including mercury. The crushing process is carried out in a closed unit without exposing workers to any hazards or causing any release to the environment. Waste collected in the filter bag and the drum is then managed according to its hazard. We suggest that EPA find out more about these devices from their manufacturers. The agency may find the use of these devices to be consistent with its policies and objectives to protect public health and the environment. Therefore the proposed requirement that generators need to minimize lamp breakage at all times should be removed.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and

that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

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 hazardous waste 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-00095
COMMENTER Allegheny Power System
SUBJECT UNWAS6
COMMENT APS strongly supports the ability of generators to engage in materials separation and consolidation (e.g. crushing) of spent lamps in an environmentally sound manner. Such activities are often necessary to facilitate storage and transportation and can be performed safely under appropriate conditions. Any prohibition on such activities simply drives up costs of compliance and frustrates participation in Green Lights and other demand-side management programs.
RESPONSE
Today=s rule adds hazardous waste lamps to the universal waste regulations in Part 273. 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).

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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.

The Agency believes that including spent lamps within the scope of the universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00108
COMMENTER Union Electric Company
SUBJECT UNWAS6
COMMENT We strongly support the ability of generators to engage in materials separation and consolidation (e.g., crushing) of all spent lamps, not just mercury-containing lamps, in an environmentally sound manner. Such activities are often necessary to facilitate storage and transportation and can be performed safely under appropriate conditions. Allowing companies to separate and consolidate their spent lamps allows the materials to be more efficiently managed. Any prohibition on such activities drives up costs and further discourages participation in Green Lights and similar programs.
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

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).

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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.

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rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00111
COMMENTER Michigan Department of Natural Resources
SUBJECT UNWAS6
COMMENT Protection During Collection. The management standards associated with the Universal Waste option would be more protective of human health and the environment. Even assuming relatively little mercury escapes into the Environment via groundwater or air after mercury containing lamps are disposed in a solid waste landfill, as assumed in the proposed conditional exclusion, there is a greater risk of release during uncontrolled collection and transportation to the landfill. It is probable that all the lamps would be broken during collection and transportation to a landfill. If the lamps are simply disposed with other solid wastes, a generator would not be concerned about whether the lamps remain whole and may prefer the volume reduction gained by breaking lamps. Lamps that remain intact during generator management would be broken during compaction in a garbage truck or while being compacted at the landfill. In addition, if a generator planned on disposal in a solid waste landfill, crushing the lamps prior to disposal would minimize the volume, and therefore, the associated disposal costs. However, in performing uncontrolled crushing the mercury could be released into the environment. Because of the characteristics of mercury, such as volatility and bioaccumulation, standards must be in place to reduce emissions under these circumstances. The conditional exclusion is based upon the assumption that mercury does not escape from a landfill and it does not contemplate emissions prior to disposal. The Universal Waste Option can provide effective management standards to reduce the potential for mercury emissions during generation, collection and transportation, as well as disposal or recycling. The Universal Waste Option should be modified to include management standards for recycling facilities instead of permits for storage prior to recycling. Under this scenario, a recycler could accept quantities of lamps for recycling and process them within a certain time frame, for example 24 hours, and as long as it was operated in compliance with hazardous waste storage facility requirements, it would not have to receive the actual permit. The permit is the single largest impediment to providing

recycling opportunities to generators. A reduction of mercury content obtained by manufacturers in fluorescent lamps and further projected reductions is cited as evidence for reduced regulation. However, it should be noted that due to the long life of these lamps, the mercury reduction actually seen in the wastestream could lag behind several years. The WMD would not be adverse to implementing standards and reviewing them in the future as circumstances change. In conclusion, the WMD supports management standards that would provide minimized mercury emissions during all phases of management and that would encourage the development of recycling networks. It appears that this could be accomplished through a Universal Waste Option, coupled with reductions in permitting requirements for lamp recycling facilities without reductions in technical standards.

RESPONSE

The Agency agrees with the commenter that the most effective method of minimizing mercury emissions and the release of other hazardous constituents from waste lamps to the environment is through the universal waste rule option. Therefore, today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards), but also allows the Agency to set specific management standards to control potential emissions. The Agency does not have extensive data characterizing the behavior of mercury released from spent lamps in a landfill environment over long periods of time. Although available data may support the conclusion that mercury may stay in a stable, non-mobile state for the shorter term and may not migrate from a landfill environment very quickly, studies also show that the greatest threat of mercury releases from the management of lamps is during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule provides a format for controlling the management of spent lamps during storage and transport, while at the same time providing a more streamlined and less stringent set of standards than the Subtitle C management standards.

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).

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.

The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste 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. 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, storage and disposal facilities. Although the destination facilities are subject to these hazardous waste management requirements for treatment, storage, and disposal 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, hazardous waste lamps can be safely recycled and the mercury and other hazardous constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since 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.

Today's final rule may facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex and less costly regulations will increase the collection of universal wastes, 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.

Today=s rule does not modify the manner in which hazardous waste recycling facilities are regulated under RCRA. Traditionally, EPA does not regulate hazardous waste recycling processes. Under RCRA, facilities that store hazardous wastes prior to recycling are required to obtain a permit for their storage activities. The universal waste rule retains this regulatory structure. Given the significant quantities of hazardous waste lamps that may be stored at a recycling facility, the Agency sees no reason at this time to modify the current RCRA permitting program for these facilities.

DCN FLEP-00126
COMMENTER Texas Natural Resource Cons. Comm.
SUBJECT UNWAS6

COMMENT Proposed requirements in ''273.31(b)(l) and (2) and (f)(1), 273 .32 (a) (1) , and '273.33 (a) and (d) (1) prohibiting intentional breakage of mercury-containing lamps and requiring them to be placed in packaging designed to prevent breakage and loss of broken pieces should be retained.

RESPONSE

Today-s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00126

COMMENTER Texas Natural Resource Cons. Comm.

SUBJECT UNWAS6

COMMENT You may also want to specifically allow generators to self-transport mercury-containing lamps without a hazardous waste transporter registration.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule does not prohibit universal waste handlers from transporting universal wastes to another handler or to a destination facility. However, if a generator does self-transport spent lamps to another handler or destination facility, the handler must comply with all applicable provisions of the universal waste transporter requirements.

The Agency notes that under the universal waste system, manifests are not required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. The Agency has decided to retain the current tracking requirements in Part 273 for hazardous waste lamps. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

DCN FLEP-00126
COMMENTER Texas Natural Resource Cons. Comm.
SUBJECT UNWAS6
COMMENT Many current facilities "treat" mercury containing lights to make the mercury more amenable to recovery/recycling. These are "treatment facilities" per the definition of "treatment" in 40 CFR '260.10 and the definitions of "recycled" and "reclaimed" in 40 CFR '' 261.1(c) (7) and (4), respectively. Many of these facilities that treat wastes to make them more amenable to recovery sincerely believe that they are recycling facilities. Under proposed '273.34, facilities that "treat" mercury containing lights to make the mercury in the calcium phosphate powder more amenable to recovery at a mercury retort facility would be subject to full RCRA permitting requirements. EPA may want to consider allowing (or letting the states allow) registration-by-rule requirements or permitting-by-rule requirements for treatment facilities that make mercury lights more amenable to mercury recovery, rather than have these facilities be subject to full RCRA permit requirements.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste 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. 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, storage, and disposal facilities. Although the destination facilities are subject to these hazardous waste management requirements for treatment, storage and disposal 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 since 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 activity described by the commenter may be Atreatment@ and not Arecycling,@ depending upon the nature of the activity and the characteristics of the commodity or waste that is derived from the process. In addition, the material that results from the waste management activity may be a partially reclaimed material and depending upon the nature of the material, may be hazardous waste and have to managed as a hazardous waste, unless a variance is obtained under 40 CFR 260.30.

The universal waste rule prohibits the treatment of universal waste by handlers and transporters. Under RCRA, treatment is defined as Aany method, technique, or process ... designed to change the physical, chemical, or biological character or composition of any hazardous waste ... 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@ ('260.10).

DCN FLEP-00130
COMMENTER U.S. Department of Energy
SUBJECT UNWAS6
COMMENT 6. EPA requests comment on the management controls that would be appropriate to impose on collection of lamps under the special collection system approach and whether requirements to minimize mercury emissions during storage and transportation of spent lamps should be included under the exclusion approach (59 FR 38296-7). As discussed in attachment I to DOE's comments on the April 12, 1993, proposed rule, pages 4-5, EPA could require the use of Department of Transportation approved containers for the initial storage of discarded lamps because use of such containers would minimize the need to repackage lamps. As an alternative, lamps could also be place in their original boxes, bubble-packed to minimize breakage, and overpacked in sealed containers to reduce mercury emissions if breakage does occur. EPA could also promulgate a general performance standard requiring generators and other handlers to manage lamps in a

manner that minimized releases of any lamp components, instead of a packaging requirement 7. EPA requests comment on whether generators or consolidation points should be allowed to intentionally crush lamps to minimize volume for storage or shipment and what, if any, standards should be imposed to protect against mercury releases during crushing or the subsequent management of crushed lamps (59 FR 38297). Generators or consolidation points should be allowed to intentionally crush lamps to minimize volume for storage or shipment. This is especially important in cases where disposal is the only option available (i.e., radioactively contaminated lamps). Volume reduction by crushing facilitates both storage and transport and future disposal. Specific RCRA standards to protect against mercury emissions during crushing should not be implemented. Occupation Safety and Health regulations already contain a permissible exposure level (PEL) and short-term exposure level (STEL) to protect workers from mercury emissions. Also, air permits are already required under existing regulations under the CAA. Any attempt under RCRA to further regulate mercury releases would be duplicative and costly for generators to meet Notwithstanding, if not developed in coordination with CAA requirements, added RCRA standards could be counterproductive especially if the RCRA standards are in conflict with CAA requirements. If EPA elects to enact a requirement for RCRA permitting for crushers, the "Permit-By-Rule" approach (see 40 CFR 270.60) should be considered for units covered under valid CAA permits.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

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 hazardous waste 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.

The Agency notes that 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, storage, and disposal facilities. Any crushing activities performed at a treatment or disposal facility (that is not part of a recycling process) are subject to full hazardous waste permitting requirements.

DCN FLEP-00136
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS6
COMMENT 4. P. 38296, 'IV.B.2, column three, 1:A third question on which the Agency requests comment is what management controls would be appropriate to impose on collection of lamps under a special collection system approach. The WDNR believes that some type of minimal management requirements are appropriate for the handling of waste mercury-containing lamps. In our guidance, we have required that lamps be "safely" handled, but most left this up to the generators. However, many of the recycling companies have responded by developing their own cartons which are very good at safely containing waste lamps. Our guidance also contains an enforcement element. We state that if > 10% of the lamps are broken, we could consider this to be mismanagement, and thus subject the generator or transporter to enforcement. We believe that this approach has worked well. Also, the recyclers have probably been more effective in this approach, because they charge significantly more (by a factor of two to twenty fold) for a broken lamp than for an intact lamp. These two elements have greatly reduced the incidence of broken lamps in Wisconsin, and we believe that they are very adequate. It is very important that USEPA develop BMPs for all parties involved in the management of these wastes - generators, transporters and recyclers.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. The Agency has not set percent breakage guidelines as a method to insure safe handling but has specified other management practices. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any

residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The universal waste rule ensures that mercury emissions and the release of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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. 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, storage, and disposal facilities. Although the destination facilities are subject to these hazardous waste management requirements for treatment, storage and disposal 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 since 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.

DCN FLEP-00136
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS6
COMMENT 5.P. 38297, 'IV.B.2, column 1, &1: In addition, requirements could be imposed on the storage and transportation of spent lamps that are inadvertently broken, to prevent further mercury emissions. Steel 55-gallon drums or any enclosed container could be used to hold broken lamps for transportation to the disposal site. The Department believes that USEPA should reconsider the possibility of requiring steel drums for the management of broken mercury-containing lamps. As we developed our guidance, the Department was informed that steel drums could absorb mercury vapors, and therefore make it more difficult to manage contaminated steel drums. Our guidance encourages broken lamps to be placed into plastic bags that will not be cut by broken glass, and then contained in a plastic or cardboard container.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. The Agency did not specify required packaging; rather, hazardous waste lamps

must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. The Agency did not specify the type of container to use but notes that closed wax fiberboard drums are acceptable packaging.

DCN FLEP-00137
COMMENTER Planned Lighting, Inc.
SUBJECT UNWAS6
COMMENT We at Planned Lighting are especially concerned about the lack of regulatory requirements for consolidation points and liability issues resulting from our sending our spent lamps to them.
RESPONSE
The final rule for hazardous waste lamps does not contain a separate category for consolidation points. EPA is including hazardous waste lamps within the universal waste regulations under 40 Part 273. At the publication of the proposed hazardous waste lamp rule, the universal waste rule was also in the proposal stage of the rulemaking process. As a result, the Agency chose to design the regulations for hazardous waste lamps in a manner that was consistent with the proposed universal waste rule. The proposed universal waste rule, and subsequently the proposed hazardous waste lamps rule, categorized regulated persons managing universal waste into four types: generators, consolidation points, transporters, and destination facilities. When the final universal waste rule was published, the Agency modified the four categories. The transporter and destination facility categories were retained essentially as proposed. However, the persons who would have been included in the generator and consolidation point categories were merged to create two new categories of participants: small quantity handlers of universal waste (SQHUWs) and large quantity handlers of universal waste (LQHUWs). In the hazardous waste lamps final rule, the Agency has decided to remain consistent with the existing universal waste regulations and retain the four categories of participants that were finalized in the universal waste rule. Consolidators would be subject to the universal waste standards for handlers. It should be noted that handlers may choose to send their universal waste directly to a destination facility if they so desire.

DCN FLEP-00143
COMMENTER A-TEC Energy Corporation
SUBJECT UNWAS6
COMMENT RECYCLING. The management of used lamps without significant breakage can be easily accomplished (just as it is with new lamps). Nearly all facilities have sufficient space for the

collection and storage of intact used lamps. Use of consolidation points can meet the needs of the few businesses/facilities that lack on site storage space.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste 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.

Today's final rule may facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex and less costly regulations will increase the collection of universal wastes, 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-00143

COMMENTER A-TEC Energy Corporation

SUBJECT UNWAS6

COMMENT A-TEC Recycling, Inc. believes that packaging regulations should remain consistent with current standards (must be DOT approved shipping container ... equal to or better than new lamp packaging). A-TEC Recycling, Inc. recommends against allowing the crushing of fluorescent and HID lamps at consolidation points unless a system is in place to capture the mercury laden gas and dust particles when these lamps are crushed (the air impact of mercury is the largest concern and a comprehensive recycling process would capture this air borne mercury as lamps are processed). Also, care must be taken to tightly seal any containers of crushed lamps as mercury vaporizes at near room temperature and can easily escape.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain

closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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).

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-00145
COMMENTER ASTSWMO
SUBJECT UNWAS6

COMMENT We believe that a fluorescent lamp management system which is protective of human health and the environment must ensure that lamps are managed in a manner which requires that the waste lamps remain intact (i.e., unbroken) up until the time they are delivered to a facility which is capable of capturing the elemental mercury as well as the mercury vapor which is contained within the lamps.

ASTSWMO also believes that USEPA should promote collection of intact lamps to minimize any potential releases of mercury to the environment which would occur from generators crushing the lamps at the generating facilities. Experiences in Minnesota and Wisconsin show that shipment of unbroken lamps is technically feasible and simple. Additionally, experiences in Minnesota indicate that the recycling facilities have at preference for receiving unbroken lamps, and in fact, charge extra for receipt of broken lamps due to difficulties and safety precautions associated with handling the broken lamps

RESPONSE

Today=s rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions and release of other hazardous constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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).

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-00150
COMMENTER Browning-Ferris, Inc.
SUBJECT UNWAS6
COMMENT Original packaging becomes less important for UTH wastes when those wastes are easily recognized. For example, light bulbs, batteries and other "object" or "article" specific UTH wastes are generally instantly recognizable by most people likely to be handling the waste. Therefore, original packaging is less important, because handlers are generally will know what it is they are handling and how to properly store or transport the waste.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions do not require that handlers use specific packages, but require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00153
COMMENTER Vermont Dept. of Environ. Conservation

SUBJECT UNWAS6
COMMENT b. At 273.31 allowances should be made for on-site treatment (such as lamp crushing) at the point of waste generation, provided that adequate control technologies are used to prevent release of any hazardous bulb constituents. Appropriate technologies are currently available and their use can reduce by as much as two thirds costs for shipping large quantities of lamps to mercury reclamation facilities.
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 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 hazardous waste 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-00156
COMMENTER National Electrical Manufacturers Assn.
SUBJECT UNWAS6
COMMENT 6. Energy inefficiency is promoted under the Universal Waste system because the mandated transportation scenario will require the transport of large volumes of light-weight material long distances to a limited number of hazardous waste landfills and recycling facilities. This is due to the fact that crushing is not allowed at the lamp management sites.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

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).

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-00156
COMMENTER National Electrical Manufacturers Assn.
SUBJECT UNWAS6
COMMENT C. COMMENTS ON EPA UNIVERSAL WASTE PROPOSAL

NEMA has a number of specific comments on EPA's proposed approach to Universal Waste for lamps, which are listed below. 1. EPA fails to acknowledge that protective crushing and separation of the mercury-laden filter for recycling or hazardous waste disposal and protective packaging of the remaining glass and metal components are possible ways to avoid the risks of collection, transportation, and storage, and to reduce the monetary and environmental costs. Therefore, the provision to prohibit treatment, (i.e., crushing) and the option of prohibiting intentional breakage of spent lamps by generators are not advisable. Crushing may be particularly important in rural states where intact lamps will have to travel long and thus costly distances to management facilities. 2. EPA states that most lamps would be shipped directly from generators to destination facilities because volumes are likely to be large enough that consolidation will not be necessary. Based on this statement, EPA requests comment on an option of only requiring the generator to maintain records that he qualifies for the exclusion but not prescribing the content or form of the records. The assertion that most lamps would be shipped directly from generators to destination facilities may be true for large-scale group relampings, which represent at best only 20 percent of re-lamping efforts, but is not true for most relamping activity. Therefore, transportation, storage, and consolidation of intact lamps, and the associated handling and transfers of custody are likely scenarios. NEMA agrees with EPA that the storage space and careful handling required for such management of intact lamps is not an attractive prospect. EPA therefore should exclude lamps from Subtitle C and establish BMPs for crushing at all sites where lamps are handled to remove the need for multiple transfers of intact lamps. EPA also should require the record-keeping recommended in NEMA's BMPs to facilitate enforcement.

RESPONSE
EPA does not believe that its proposed conditional exclusion approach would sufficiently protect

human health and the environment. Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. 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 hazardous waste 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.

Management costs under the universal waste management system approach would be lower than

full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and disposal or recycling facilities. The Agency has decided to retain the current tracking requirements in Part 273 for hazardous waste lamps. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of all universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

DCN FLEP-00159
COMMENTER Motorola, Inc.
SUBJECT UNWAS6
COMMENT 1 . Crushing and Breakage of Lamps. The Agency has included an outright prohibition on the crushing and breakage of lamps under the Universal Waste Management System approach. From the discussion in the preamble, it is apparent the EPA may also apply this prohibition as a requirement of the conditional exclusion. Motorola is particularly concerned that the Universal Waste Management System proposal prohibits lamp crushing and that the exclusion is silent on this practice. Currently, seven Motorola facilities engage in crushing of mercury containing lamps in containers prior to disposal or recycling. (More Motorola facilities would use bulb crushers, but they are concerned whether such a practice may be construed by state regulators as treatment of hazardous waste which would require a permit.) EPA should clarify that under either option, crushing of bulbs is acceptable provided that the OSHA PEL for mercury is met. Crushing reduces the volume of the fluorescent lamps by greater than 90% and thus minimizes storage and transportation costs. It has been our experience, that crushing can be conducted safely with proper controls. The majority of the seven referenced facilities utilize fluorescent lamp crushers manufactured by Dextrite. These devices include mercury vapor control with a filter system that traps mercury vapor gases in a filter cartridge. (See Attachment A). [See hard copy of FLEP-00159 for attachment.] Typically, a bulb crusher with a 540

bulb per 55 gallon drum capacity is utilized to accomplish size reduction. Personnel risk assessment has shown minimal exposure potential. Specifically, Los Alamos National Laboratory ("LANL") generated a paper entitled "Managing Fluorescent Light Bulbs as Hazardous Waste" which indicates that personal monitoring results for employees engaged in operating the Dextrite bulb crushers was a fraction of the OSHA permissible exposure level. (See Attachment B). [See hard copy of Comment FLEP-00159 for attachment.] Motorola's sampling results for this process corroborate LANL's results. Motorola utilized a Jerome Hg Vapor Analyzer Model 411 and obtained sample results that are approximately 10% of the OSHA PEL. (See Attachment C). [See hard copy of Comment FLEP-00159 for attachment.] The bulb crusher's filters are sent off-site to a permitted facility for metals reclamation. The crushed glass, which sometimes is below TCLP thresholds, is also sent to permitted facilities for recycling. Los Alamos National Laboratory and a significant number of Motorola sites have concluded that the on-site crushing of fluorescent light bulbs ensures minimal handling, shipping and exposure potential.

RESPONSE

The Agency thanks the commenter for the information included on bulb crushers. Today=s rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. 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).

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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-00160
COMMENTER Central and South West Services, Inc.
SUBJECT UNWAS6
COMMENT Crushing of lamps is environmentally safe and must be allowed in order to reduce volume, facilitate storage and promote economies of scale.

VI. CRUSHING IS AN ENVIRONMENTALLY SOUND AND ECONOMICALLY PRACTICABLE FORM OF LAMP MANAGEMENT THAT MUST BE PRESERVED.
EPA solicits comments on whether generators, or if the Agency selects the universal waste option, consolidation points, should be allowed to crush lamps prior to off-site management. Id. at 38297. CSW believes that it is absolutely imperative to preserve this management option in order to facilitate transportation, disposal and recycling by reducing the volume of materials and promoting economies of scale. The record makes clear that crushing practices can done in an environmentally sound manner and thus there is no practical reason for barring this management option. A. Crushing Can be Conducted in an Environmentally Sound Manner EPA's analysis of lamp crushing

technologies reveals that generators are perfectly - capable of employing appropriate technologies to conduct crushing in a manner that is both protective of human health and the environment, and cost-effective. EPA Report Evaluation of Mercury Emissions From Fluorescent Lamp Crushing, Control Technology Center (Feb. 1994)("Report"). EPA's Report points out that crushing of mercury-containing lamps serves two vital purposes: to recover mercury from the lamps and to reduce the volume of the lamps being disposed in landfills. Report at 8. According to the Report, recovery of mercury in lamps, which begins with crushing, is "desirable," as recovery results in a net reduction of mercury released to the environment. Id. at 22. EPA's Report discusses at least two "well-controlled crusher systems" which use a vacuum collection system to prevent release of mercury. Id. In both cases, the air is passed through a cyclone, a HEPA filter and a carbon adsorber before being exhausted. The cyclone removes glass particles; the HEPA filter removes the phosphor powder, which contains most of the mercury; and the carbon adsorber captures mercury vapor. Id. at 22. These controls, the Report notes, reduce mercury levels near the crusher to "well below the 0.05 mg/m3 OSHA limit," which implies an emission reduction of at least 90 percent. Id. at 23 (emphasis added). Such crushers result in mercury emissions "well below" OSHA limits. Id. at 23. Thus, at a minimum, crushing can be conducted in an environmentally sound manner in these two types of units. Therefore, while CSW believes that crushing must be performed in an environmentally protective manner, there is absolutely no basis for a total prohibition on this important management practice. Crushing can take place in a closed container where it can be confirmed OSHA permissible exposure limits ("PELs") are met. (Fn. 11 - In fact, some utilities currently engage in this practice. One utility comments that as long as this type of equipment is used according to manufacturers' specifications and the waste material is properly packaged, crushed lamps should be acceptable for landfilling. Comments submitted by Wisconsin Power & Light Company to RCRA Docket (Oct. 25, 1994)). Thus, crushing of lamps should be authorized provided that the entity engaging in such operations is -equipped with an adequate crusher. Furthermore, CSVV is adamantly opposed to any restriction that authorizes crushing only at recycling facilities. There is no legitimate technical or legal basis for

authorizing crushing at commercial recycling facilities, while prohibiting similar conduct by generators. Provided that both types of entities are capable of performing such activities adequately -- which they are -- it would be arbitrary and capricious to authorize crushing by only recyclers, while depriving generators of the same management option. B. The Management Option of Crushing Lamps Makes Participation in Green Lights Economically Practicable As discussed above, crushing allows lighting waste generators to minimize waste volume in an environmentally safe and efficient manner. Thus, prohibiting crushing would simply impose an unnecessary burden on generators and would complicate and impede disposal or recycling. In addition, requiring individual packaging or re-use of containers in which new lamps are received would drive up costs substantially and frustrate participation in Green Lights and similar programs. These concerns are borne out in the individual comments of USWAG members, who are key participants in the success of energy- efficient relamping programs.- For example, one utility has explained that a prohibition on crushing may offset any cost savings produced by easier consolidation or transportation under the universal waste proposal. Another utility, cautioned in its comments that "[allowing companies to separate wad consolidate [, crush] their spent lamps allows do materials to be more efficiently managed. Any prohibition on such activities drives up costs and further discourages participation in Green Lights and similar programs." Comments submitted by Union Electric Company to RCRA Docket at 2 (Oct. 27, 1094). Other utilities have expressed similar concerns.- Comments submitted by Monongahela - Power Company, Potomac Edison Company and West Penn Power Company (Oct. 10, 1994) Southern Company (Sept. 22, 1994); Potomac Electric Power Company (Sept. 21, 1994); Georgia Power Company (Sept. 16, 1994). C. Regulatory Implications of Crushing It is important that EPA clearly articulate in the final rule the regulatory implications of crushing mercury-containing lamps. Of course, this issue becomes less complicated under the conditional exclusion option because the management of mercury-containing lamps would fall outside of the Subtitle C system. However, if EPA selects a management scheme that keeps mercury- containing lamps within the Subtitle C (despite the technical record that argues against this), the potential regulatory complications of crushing become more complicated. In the proposal, EPA broadly

classifies crushing as "treatment." 59 Fed. Reg. at 38297. While (CSW acknowledges that crushing that is undertaken intentionally to reduce the volume of a waste to render it more amenable for storage, transport or disposal is "treatment" as that term is defined by EPA (= 40 C.F. R. ' 260.10), it is important that the Agency reiterate that such "treatment" can be conducted without a permit under the so-called 90-day accumulation rule. See 40 C.F.R' 262.34; 51 Fed. Reg. 10146, 10160 (March 24, 1986). Preservation of this option under any type of Subtitle C regime (including the universal waste option) is absolutely critical to enable participants in energy-efficient relamping programs to consolidate and package lamps in an economical manner for off-site recycling or disposal. It also is important for EPA to clarify -- as it has done in the past that not all activities that result in altering the physical characteristics of lamps is necessarily "regulated" treatment. Specifically, the Agency has explained on several occasions that the physical alteration of a material that is incidental (I&, not intended) to transportation or collection is not "regulated'! treatment -- , in other words, a permit is not required for such unintended, incidental changes to the physical composition of a waste. Letter from Skinner, Director, Office of Solid Waste, EPA, to Scarbrough, Chief, Residuals Management Branch, EPA Region IV (Nov. 26, 1984) (process that is simply to "facilitate disposal" does not constitute "treatment"); Letter from Williams, Director, Office of Solid Waste, EPA, to Manthey, GW Inc. (Sept. 10, 1985) (bulking and consolidating of waste from multiple generators in a single tanker truck does not constitute "treatment"); Letter from Lowrance, Director, Office of Solid Waste, EPA, to Jaekels, GSX (Government Services Inc. (March 1, 1990) (incidental effects of bulking of hazardous waste to facilitate transportation may not meet the definition of treatment, since there is no intent to render the wage nonhazardous or less hazardous). See also United States v. Great Lakes Casting Corp., No. 1:92-CV-645 (W.D. Mich. March 23, 1994). This point is especially important in the case of lamps that are removed from service during relamping activities which, as a result of consolidation or transportation activities, may undergo changes in physical composition incidental to such activities. If such "changes" are purely incidental to the associated consolidation and/or transportation activities, then such activities do not fall within the definition of "treatment"

as defined by EPA and do not trigger RCRA's permit requirements.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. 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 hazardous waste 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.

Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and disposal or recycling facilities. The Agency has decided to retain the current tracking requirements in Part 273 for hazardous waste lamps. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of all universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

The universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

Today=s final rule does not in any way affect current policy on the definition of Atreatment.@ If there is a particular situation the commenter needs clarification on, he should request an interpretation from his implementing agency.

DCN FLEP-00162
COMMENTER Delaware Department of Natural Resources
SUBJECT UNWAS6
COMMENT Packaging - Requirements to minimize the breakage of lamps is necessary to reduce mercury releases to the environment
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to

the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

DCN FLEP-00163
COMMENTER Massachusetts Dept. of Environ. Prot.
SUBJECT UNWAS6
COMMENT C. Other Comments (on both Options) 1. Should generators be allowed to intentionally crush lamps to minimize volume for storage or shipment: MA DEP does not currently favor allowing crushing of hazardous SFLs by generators(at the site of generation) as a packaging technique to allow shipment of a smaller volume of SFL waste for recycling. MA DEP is primarily concerned with the hazards posed to generator personnel by crushing and dismantling practices that would have very little regulatory oversight. MA DEP may reconsider this position as new on-site lamp dismantling technologies, that are both protective and easy to use, become available.
RESPONSE
The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. 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).

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-00166
COMMENTER American Electric Power Service Corp.

SUBJECT UNWAS6
COMMENT VII. CRUSHING OF [LAMPS] IS A PRUDENT MANAGEMENT PRACTICE. EPA requests comments on whether generators and storers of bulbs should be allowed to crush bulbs. While crushing should be conducted in a controlled fashion, there are numerous commercially available and environmentally acceptable lamp crushing devices. In general, these devices are designed to prevent the release of particulates, including mercury, during the crushing process. Air is trapped and filtered such that when it is ultimately discharged it meets OSHA worker exposure standards for mercury. EPA's own analyses of lamp crushing technologies points out that generators of lamps are capable of consolidating the waste through certain crushing operations. More specifically, it is noted that crushing is a prudent management practice aimed at consolidating the waste stream for more economic shipment and making mercury recovery plausible. By crushing bulbs, the required space for storage is minimized, the waste can be transported in a safer fashion, and costs to dispose/recycle the waste are lower (depending upon certain factors).Therefore, crushing is a safe and plausible alternative method of management which should be authorized provided an acceptable method of crushing is employed. Generator should be allowed to crush lamps and state agencies should not be burdened with having to permit these small crushing installations.
RESPONSE
The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. 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 hazardous waste 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 encouraging the development of state regulatory programs that include specific standards for the safe crushing of hazardous waste lamps.

DCN FLEP-00167
COMMENTER Florida Power and Light Company
SUBJECT UNWAS6
COMMENT Also in line with USWAG comments, Florida Power and Light Company strongly supports affording generators of lighting waste with several pre-disposal management options with which to manage their lighting waste, which will achieve the same environmental goal. Whether this involves dismantling, crushing, or consolidation of lamps prior to reclamation or disposal, a certain amount of flexibility needs to be allowed to facilitate storage and transportation of these materials.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions do not require that handlers use specific packages, but require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible

with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

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 hazardous waste 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.

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.

Today=s final rule allows handlers of universal waste lamps to accumulate lamps for one year. The provisions also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery,

treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose). The universal waste rule ensures that mercury emissions and the release of any other hazardous constituents are minimized during all stages of lamp management. The universal waste 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.

DCN FLEP-00170
COMMENTER National Assn. of Energy Services Comp.
SUBJECT UNWAS6
COMMENT B. A Regulatory Regime Applicable to the Handling of Lamps From the Point of Generation to the Point of Recycling or Disposal Should Be Adopted. Adoption of the Universal waste rule for mercury-containing lamps offers several benefits. In particular, it already incorporates a number of measures appropriate to regulatory regime treating lamps as a special waste with tailored management provisions, while, again, encouraging recycling, may be considered. In fact, such a regime might better reflect nuances unique to spent lamp management. However, irrespective of the course the EPA elects, as part of its final rule governing the management of waste lamps. NAESCO would encourage the EPA to develop regulatory measures appropriate to the handling, storage and transportation of spent mercury-containing lamps. Issues relevant to handling, storage and transportation are particularly important in the case of lamps since they are fragile and since, unbroken, they represent a relatively large volume of waste. Clearly the primary goal of management from the point of generation to the point of disposal or recycling is to reduce lamp breakage. A further goal, as technologies develop, should be to encourage volume reduction for transportation in order to reduce the negative environmental impacts associated with the transportation of large volumes of intact lamp. NAESCO encourages the EPA to provide specific instruction with respect to onsite storage; crushing, to the extent technologies are available; transportation from the point of generation to interim collection points or to the disposer or recycler if the Universal waste rule is not adopted or if interim collection points are not used.
RESPONSE

EPA agrees with the commenter that the universal waste approach for lamps is the better approach. Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273 as suggested by the commenter. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste 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. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions and the release of any other hazardous constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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).

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.

Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests are not required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of all universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

DCN FLEP-00171
COMMENTER Monsanto Company
SUBJECT UNWAS6
COMMENT C. The Agency Should Not Prohibit the Crushing of Bulbs Prior to Shipment. The Agency has proposed as part of the Universal Waste option to prohibit the crushing of bulbs by the generate or consolidation point, crushing which is obviously intended to reduce the volume of waste for storage or shipment. The discussion implies a concern on the part of the Agency regarding air emissions from such operations. As discussed above, data provided by NEMA, reflecting experimental work done by Lawrence Berkeley labs and others, indicate that breakage of a non-operating Hg-lamp will release only 0.06-0.2% of the contained mercury, or about 0.04 mg per lamp. Even if the glass shards are exposed to open room air for 24 hours, this percentage only rises to 1%. Clearly, the atmospheric release of mercury due to crushing should not be considered an issue. With regard to personnel exposure, Monsanto has tested. The operation of a commercial bulb crusher without the carbon canister in place and has found mercury exposure within acceptable levels. Even though emissions during crushing are low, however, commercial devices come equipped with such canisters as an added

> precaution to prevent personnel exposure. Adequate controls and requirements exist under the Occupational Safety and Health Act to prevent employee exposures to problematic levels of mercury. The Office of Solid Wastes should not act to impose requirements opposed to crushing. The shipment of whole lamps, instead of crushed lamps, can be expected to add considerably to transportation costs. Any prohibition against crushing is particularly unsupportable in the event that the Agency elects to use the Conditional Exclusion approach, as recommended by Monsanto. In the act of disposal of Hg-lamps, or in the transport of lamps to the landfill for disposal, the Hg-lamps are almost certain to be broken and crushed. It makes little sense to prohibit crushing in an up-front operation.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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 hazardous waste 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- 00175
COMMENTER AT&T
SUBJECT UNWAS6
COMMENT The UWR also mandates management regulations for generators, transporters, consolidation points, and destination facilities that, in our opinion, are unnecessarily burdensome. These proposed regulations, namely inventory control, labeling, storage conditions, breakage prevention and remediation, and notifications, do not result in the prevention of significant mercury emissions as illustrated in the Research Triangle Institute Report. Instead, they impose unnecessarily burdensome and costly management practices and are more favorable addressed under the CE approach.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA

decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). The conditional exclusion would have limited EPA=s jurisdiction in controlling the management of hazardous waste lamps and therefore, could have resulted in increased releases of mercury and other hazardous constituents to the environment and potentially, increased risks to human health and the environment.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

Studies show that the greatest threat of mercury releases from the management of lamps is during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal rule provides a format for controlling the management of spent lamps during storage and transport, while at the same time providing a more streamlined and less stringent set of standards than the Subtitle C management standards.

The universal waste rule represents a significant cost reduction over Subtitle C management requirements for generators, collectors, and transporters, yet ensures that lamps are recycled or treated in an environmentally protective manner at Subtitle C facilities. Fewer hazardous waste 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 FLEP- 00175
COMMENTER AT&T
SUBJECT UNWAS6
COMMENT The Agency requests comments on whether generators or consolidation points should be allowed to intentionally crush lamps to volume for storage or shipment and what, if any, standards should be imposed to prevent release of mercury. AT&T

recommends allowing the on-site crushing of used lamps as an acceptable option for lamp management provided that (a) crushing is conducted using equipment that does not emit fugitive mercury vapors in excess of the threshold limit value specified in the latest edition of the American Conference of Governmental Industrial Hygienists' (ACGIH) Threshold Limit Values for Chemical Substances and Agents; (b) crushing is conducted in vessels that meet the standards for containers defined in 40 CFR, Part 265, Subpart I, Use and Management of Containers; and (c) crushings are managed for final disposition in accordance with the program finalized under the Proposal. In addition, AT&T strongly recommends excluding on-site crushing as a treatment method provided the crushing is conducted in accordance with the aforementioned conditions.

RESPONSE

Today=s rule adds hazardous waste lamps to the universal waste regulations under Part 273. 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).

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-00176
COMMENTER Coalition of Lamp Recyclers
SUBJECT UNWAS6
COMMENT The Coalition firmly refutes the premise that on-site crushing or MSW land disposal does not release mercury adding to the atmospheric loading and bioaccumulation and recommends that EPA

conduct tests through independent laboratories on the level of release that exists.

RESPONSE

EPA notes for the commenter that the Agency published a Notice of Data Availability on July 11, 1997 (62 FR 37183). This notice presented additional data collected and additional analyses conducted by the Agency and an assessment of potential mercury emissions from the management of spent hazardous waste lamps under several regulatory approaches.

Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes. Further data and analysis are necessary to evaluate the potential for mercury to be released in landfill leachate as a landfill ages. Studies show that the greatest threat of mercury releases from the management of lamps is during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The universal waste rule provides a framework for controlling the management of spent lamps during storage and transport, while at the same time providing a more streamlined and less stringent set of standards than the Subtitle C management standards.

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-00176

COMMENTER Coalition of Lamp Recyclers

SUBJECT UNWAS6

COMMENT The special collection facility may have difficulty managing all of the intact lamps that could potentially be shipped to them. Breakage is a concern due to the potential for mercury release. Also, intact lamps consume considerable space. The generator,

regardless of size, should ship directly to, the recycler, whenever possible. Transporters should be encouraged to set up milk runs to accommodate the lesser quantities being generated at individual sites. It is quite difficult to comment with certainty on the universal hazardous waste rule since the rule is not in a final form. Predicting how lamps can/should be managed within an infrastructure that has not been developed is risky and uncertain. The better alternative would be to have some idea what the universal hazardous waste rule may result in and then determine if lamps could be properly managed within that system and at those special collection facilities. In the interim, EPA should establish regulations promoting recycling and support the efforts of the recyclers to remove mercury exposure to the environment from mercury-containing lamps. On-site crushing, either at the generator or the special collection facility, should be prohibited. Drum crushers are not designed to separate the components of the lamps. The mercury capture system is inadequate to ensure safe operating level. It is the recyclers' experience that the drums crushers emit significant amount of mercury emissions. Levels exceeding the OSHA TLV by two to three times have been seen when crushing at a rate of over 600 per hour. There are a number of industrial hygiene studies that have tested crushers and have documented very high mercury emissions in and around the crusher as well as the workplace. [1] [Footnote 1: Kirshner, D.S., Billau, R.L. and MacDonald, T., Fluorescent Light Tube Compaction: Evaluation of Employee Exposure to Airborn Mercury, Applied Industrial Hygiene, EPA Contract No. 68-D1-0119 (1988)] The Minnesota Pollution Control Agency has in its fact sheet for Minnesota businesses "Do not break or crush lamps because mercury may be released. See Portable Lamp or Barrel-top Crushers. " The physical hazard of flying glass should also be considered. Recycler's staff are equipped and trained to safely handle and manage mercury-containing lamps. Their staff is trained and undergoes medical monitoring for mercury levels. In the event of a problem, the proper clean-up equipment is available at lamp recycling facilities as well as adequate air pollution control equipment to effectively capture the mercury emissions.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. 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).

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.

Source reduction, which is the reduction or elimination of the toxicity and/or volume of a waste product, is at the top of EPA's hierarchy of solid waste management methods. The Agency encourages cost-effective source reduction of mercury contained in fluorescent lamps. Second on the hierarchy is recycling. Today's final rule will greatly facilitate the environmentally-sound collection and the proper recycling or treatment of hazardous waste lamps. Based on the belief that less complex and less costly regulations will increase the collection of universal wastes, the Agency did not limit the universal waste system to the recycling of waste. Today=s rule retains requirements for hazardous waste lamps to be recycled or treated and disposed in accordance with RCRA Subtitle C hazardous waste management requirements. This may provide incentives for lamp manufacturers to pursue additional source reduction efforts to reduce or eliminate the amount of mercury used in the manufacture of fluorescent tubes. If source reduction is pursued aggressively by the fluorescent lamp manufacturing industry, the overall contribution of mercury from fluorescent lamps to municipal solid waste could decrease over time.

The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste 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. 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, storage, and disposal facilities. Although the destination facilities are subject to these hazardous waste management requirements for treatment, storage and disposal 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, hazardous waste lamps can be safely recycled and the mercury and other hazardous constituents can be reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since it is in the recycling facility's best economical interest to limit mercury releases since mercury is essentially the product of the recovery process.

DCN FLEP-00179
COMMENTER Environmental Defense Fund
SUBJECT UNWAS6
COMMENT Any crushing that occurs at recycling facilities under the universal waste management system will be under greater state and federal scrutiny than if the garbage collectors were able to crush the lamps because there are there will be far fewer operators and crushing sites to oversee. We support the universal waste management system requirement which precludes lamp crushing by generators, transporters, and consolidators. Even option two of the proposed rule is deficient in addressing the hazards of inadvertent or intentional lamp crushing during lamp storage and transport by not specifying an enforceable percentage or percentages for "minimizing lamp breakage" at generator, transporter, and consolidation points. [13] [Footnote 13: See proposed sections 273.31(b)(1) and (f), 273.32(a)(1)(I) and (4)(I), 273.33(a)(1) and (d).] We believe that very low breakage percentages are achievable with proper packaging of lamps and appropriate instruction of generator, transporter, and consolidation point workers. EPA should require that gasketed, sealed containers be used to minimize leakage of fine powders from any broken lamp parts and that sulfur powder and/or other materials which bind mercury vapors be used for container covers.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The Agency has not set percent breakage guidelines as a method to insure safe handling but has specified other management practices. The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of

mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury and any other hazardous constituents to the environment in the case of unavoidable breakage.

The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

The Agency agrees with the commenter that crushing of hazardous waste lamps requires federal and/or state regulation. 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).

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-00180
COMMENTER Food Marketing Institute
SUBJECT UNWAS6
COMMENT In addition, the suggested special packaging requirements would be an unnecessary, burdensome hoop for generators to jump through. The storage, notification and record keeping requirements would complicate consolidation programs like the one proposed in New Jersey. Prohibiting the crushing of lamps by generators would limit flexibility unnecessarily.
RESPONSE

Today=s rule adds hazardous waste lamps that are hazardous waste because the lamps exhibit a hazardous waste characteristic for mercury and/or other hazardous constituent to the scope of the universal waste rule (40 CFR Part 273). The universal waste regulations are streamlined hazardous waste management standards governing the collection and management of certain widely generated wastes. By adding hazardous waste lamps to the scope of the universal waste rule, the final rule will facilitate the environmentally-sound collection of lamps and increase the proper recycling or treatment of hazardous waste lamps.

Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. The universal waste regulations include basic packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

The Agency believes that the storage and notification requirements for handlers of universal waste lamps are not unnecessarily burdensome since these requirements are less stringent than the requirements under full Subtitle C regulation. Under the universal waste rule, large quantity handlers of universal waste are subject to the notification requirement. A handler that accumulates more than 5,000 kg total of universal wastes at any one time is designated as a large quantity handler of universal waste and is subject to the notification requirements of 40 CFR 273.32. The notification requirement is a one-time notification and is applicable on a Asite-specific@ basis. Large quantity handlers must notify the EPA Regional Administrator of their universal waste management activities and obtain an EPA identification number, if they don=t already have one. Small quantity handlers of hazardous waste lamps are not required to notify EPA of spent lamp handling activities.

The accumulation time limit allows sufficient time for the accumulation of lamps to facilitate proper recycling or disposal of lamps. Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation

up to one year is for this purpose).

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).

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-00182
COMMENTER Eastman Kodak Company
SUBJECT UNWAS6
COMMENT As noted above, intentional crushing is a popular management option and can be done safely in a manner to prevent mercury emissions. It should not be prohibited. In a similar manner, managing mercury-containing lamps as Universal Wastes should not prohibit treatment in containers or tanks.
RESPONSE
Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. 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 hazardous waste 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-00186
COMMENTER Building Owners or Managers Assn. Int.
SUBJECT UNWAS6
COMMENT Packaging Requirements BOMA members believe that the requirement to use original new tube shipping boxes storage and transportation of unbroken lamps is reasonable. However, we believe that the proposed requirements for broken lamps need to be clarified -- for example, to what extent must the packaging "minimize" releases of lamp fragments and residues? The requirements must not be overly burdensome for the type of hazard presented. For example, considering the lack of scientific data available relevant to the amount of mercury

released and its impact on health and safety, requiring steel drums for a small amount of broken lamps would be overly burdensome for building owners and managers. BOMA recommends that EPA implement an exemption for small quantities of broken lamps.

RESPONSE

Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Broken lamps remain subject to regulation as universal waste.

Under the universal waste system, conditionally-exempt quantity generators can choose to manage their universal waste lamps in accordance with either the CESQG regulations under 40 CFR 261.5 or as universal waste under Part 273 (40 CFR 273.8(a)(2)). Facilities that manage their hazardous waste lamps as universal waste under 40 CFR Part 273 do not have to include lamps in the facility=s determination of hazardous waste generator status (40 CFR 261.5 (c) (6)). If the generator manages such lamps under the universal waste system and does not generate any other hazardous waste, that generator is not subject to other Subtitle C hazardous waste management regulations, such as the regulations in Part 262. Household hazardous waste remains exempt from RCRA Subtitle C under the federal program

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00187
COMMENTER PacifiCorp
SUBJECT UNWAS6
COMMENT VI. CRUSHING IS AN ENVIRONMENTALLY SOUND AND

ECONOMICALLY PRACTICABLE FORM OF LAMP MANAGEMENT THAT MUST BE PRESERVED. EPA solicits comments on whether generators, or if the Agency selects the universal waste option, consolidation points, should be allowed to crush lamps prior to off-site management. 59 Fed. Reg. at 38297. PacifiCorp believes that it is absolutely imperative to preserve this management option in order to facilitate transportation, disposal and recycling by reducing the volume of materials and promoting economies of scale. The record makes clear that crushing practices can be done in an environmentally sound manner and thus there is no practical reason for barring this management option. A.Crushing Can be Conducted in an Environmentally Sound Manner EPA's analysis of lamp crushing technologies reveals that generators are perfectly capable of employing appropriate technologies to conduct crushing in a manner that is both protective of human health and the environment, and cost-effective. See EPA Report, Evaluation of Mercury Emissions From Fluorescent Lamp Crushing, Control Technology Center (Feb. 1994) ("Report"). EPA's Report points out that crushing of mercury-containing lamps serves two vital purposes: to recover mercury from the lamps and to reduce the volume of the lamps being disposed in landfills. Report at 8. According to the Report, recovery of mercury in lamps, which begins with crushing, is "desirable," as recovery results in a net reduction of mercury released to the environment. Id. at 22. EPA's Report discusses at least two "well-controlled crusher systems" which use a vacuum collection system to prevent release of mercury. Id. In both cases, the air is passed through a cyclone, a HEPA filter, and a carbon absorber before being exhausted. The cyclone removes glass particles; the HEPA filter removes the phosphor powder, which contains most of the mercury; and the carbon absorber captures mercury vapor. Id. at 22. These controls, the Report notes, reduce mercury levels near the crusher to "well below the 0.05 mg/m3 OSHA limit," which implies an emission reduction of at least 90 percent. Id at 23 (emphasis added). Such crushers result in mercury emissions "well below" OSHA limits. Id. at 23. Thus, at a minimum, crushing can be conducted in an environmentally sound manner in these two types of units. The solution to the crushing issue is regulation, not prohibition. Crushing can and should be authorized as long as it takes place in a closed container where it can be confirmed that OSHA permissible exposure limits ("PELs") are met. [8] [Footnote 8: PacifiCorp wishes to point out that EPA has misinterpreted

the scope of its support, expressed in previous comments, for the universal waste exclusion. EPA has construed PacifiCorp's comments as supporting, as a first option, incorporating lighting wastes into the universal waste rule. On the contrary, PacifiCorp feels strongly that lighting wastes should be included in the universal waste rule only as a last resort if the Agency did not adopt the conditional exclusion option.] Crushing allows lighting waste generators to minimize waste volume in an environmentally safe and efficient manner. Thus, prohibiting crushing would simply impose an unnecessary burden on generators and would complicate and impede disposal or recycling. In addition, requiring individual packaging or re-use of containers in which new lamps are received would drive up costs substantially and frustrate participation in Green Lights and similar programs. B. Regulatory Implications of Crushing If EPA selects a management scheme that keeps mercury-containing lamps within Subtitle C (despite the technical record that argues against this), the potential regulatory implications of crushing become more complex. In its proposed rule, EPA broadly classifies crushing as "treatment." 59 Fed. Reg. at 38297. While PacifiCorp acknowledges that crushing that is undertaken intentionally to reduce the volume of a waste to render it more amenable for storage, transport or disposal is "treatment" as that term is defined by EPA (see 40 C.F.R. ' 260.10), it is important that the Agency reiterate that such "treatment" can be conducted without a permit under the so-called 90-day accumulation rule. See 40 C.F.R. ' 262.34; see also 51 Fed. Reg. 10146, 10160 (March 24, 1986). Preservation of this option under any type of Subtitle C regime (including the universal waste option) is absolutely critical to enable participants in energy-efficient relamping programs to consolidate and package lamps in an economical manner for off-site recycling or disposal. It also is important for EPA to clarify -- as it has done in the past -- that not all activities that result in altering the physical characteristics of lamps is necessarily "regulated" treatment. Specifically, the Agency has explained on several occasions that the physical alteration of a material that is incidental to transportation or collection is not "regulated" treatment. In other words, a permit is not required for such unintended, incidental changes to the physical composition of a waste. This point is especially important in the case of lamps that are removed from service during relamping

activities which, as a result of consolidation or transportation activities, may undergo changes in physical composition incidental to such activities. If such "changes" are purely incidental to the associated consolidation and/or transportation activities, then such activities do not fall within the definition of "treatment" as defined by EPA and do not trigger RCRA's permit requirements.

RESPONSE

The Agency appreciates the commenter's suggestions on the management of hazardous waste lamps under the universal waste option. However, 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 hazardous waste 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.

The Agency notes the commenters support for the conditional exclusion approach to managing hazardous waste lamps. The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Before today=s rulemaking, hazardous waste lamps that exhibited a hazardous waste characteristic had to be managed under full Subtitle C management standards. Under the universal waste regulations, storage, transportation, and record keeping requirements are less stringent than the Subtitle C regulations for generators and transporters of universal waste. In addition, small quantity handlers of universal waste (those facilities that accumulate 5,000 kilograms or less of total universal waste at one time) are not subject to the universal waste notification and record keeping requirements. A significant number of commenters indicated that savings from reduced energy usage more than cover the cost of managing lamps as part of the universal waste regulations. Other commenters indicated the costs for managing lamps may now increase.

The Agency performed calculations on the impact of disposal costs on a lighting upgrade=s internal rate of return (IRR). At a $0.50/lamp transportation and recycling cost, the IRR for a typical project over ten years is 51 percent. At a $1.00/lamp transportation and recycling cost the IRR was 50 percent, which is only a slight decrease in IRR, despite a 100 percent increase in waste management costs. This result suggests that the cost associated with the participation in energy-efficient lighting programs is largely independent of the regulatory options chosen by EPA.

Today=s final rule does not in any way affect current policy on the definition of Atreatment@. If there is a particular situation the commenter needs clarification on, he should request an interpretation from his implementing agency.

DCN FLEP-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT UNWAS6
COMMENT The Universal waste rule was designed to facilitate the management of bulk materials, not fragile, intact lamps. The

lack of regulatory controls at Consolidation Points, and the potential for increased liability, may limit willingness to use these facilities.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

Hazardous waste lamps meet the criteria used to determine if a hazardous waste fits, into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The criteria, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous wastestreams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

DCN FLEP-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT UNWAS6
COMMENT Option 2: Universal waste rule Lamp Crushing Onsite: As stated above, Westinghouse believes the EPA should modify the proposed rule to allow lamp crushing onsite. Although crushed lamps are more difficult and costly to recycle, reduced storage and transportation costs would narrow or offset this difference. In addition, crushing the lamps in a container with a vacuum pump and filter, to capture any mercury vapors, minimizes the

potential for a release should an accident occur.

Prohibition Against Dilution (page 38303): It is not clear how lamps could be diluted if they may not be crushed. What does this regulation intend to prevent? Management of Residues (page 38303): The proposed rule should allow generators and consolidation point operators to store and manage broken lamps with intact lamps. The proposed rule implies these residues would have to be managed in a separate storage facility, even though they may ultimately be sent to the same recycling facility or landfill.

RESPONSE

The current universal waste rule prohibits universal waste handlers from treating universal wastes (40 CFR '273.11 and 273.31). The final rule adding hazardous waste lamps to the universal waste rule, 40 CFR Part 273, 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).

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.

The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Broken

lamps remain subject to the universal waste regulations finalized today as long as they are stored properly.

The prohibition on the dilution of universal wastes remains unchanged as a result of today=s rule. As mentioned in the preamble to the proposed lamps rule, the Agency=s intention was to ensure that if hazardous waste lamps were included in the scope of the universal waste rule, the Agency would ensure consistency with the more comprehensive universal waste rule. Therefore, the universal waste rule, as amended by today=s final rule, retains the handler prohibitions for treatment and dilution of all universal wastes.

DCN FLEP-00189
COMMENTER National Aeronautics and Space Admin.
SUBJECT UNWAS6
COMMENT Packaging requirements can be determined by referencing 49 CFR. Generators have a financial incentive to prevent lamp breakage because of the increased costs associated with treating broken lamps. Treatment by crushing should only be allowed by generators, transporters, or consolidators if standards and permitting procedures are promulgated. It is difficult to contain mercury emissions while using drumtop crushers with the currently available technology.
RESPONSE

Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. This adds packaging requirements for universal waste lamps to the universal waste rule. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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 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).

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-00190
COMMENTER Browning-Ferris Industries
SUBJECT UNWAS6
COMMENT The Green Lights program may inadvertently create a more serious environmental problem by loosening the requirements on manifesting, transportation and storage. Depending on the exact outcome of the rule it could encourage the stockpiling of large quantities of mercury lamps that could then be abandoned. Abandonment, has been a chronic problem under the hazardous waste program where generators have been deceived by low prices offered by unscrupulous parties who never intended to comply with the full set of hazardous waste regulations in the first place. Unfortunately, the universal waste rule may make it easier for unscrupulous operators to deceive generators since the rules requiring manifesting would be done away with or relaxed.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The Agency does not believe that allowing handlers of spent lamps to accumulate the lamps for longer periods of time will increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. In addition, handlers are only allowed to accumulate hazardous waste lamps for longer than one year if such accumulation is solely for the purpose of accumulating such quantities as are necessary to facilitate proper recovery, treatment, or disposal. The Agency believes that today's final rule may facilitate environmentally-sound collection and increase proper recycling or treatment of spent hazardous waste lamps.

Today=s standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous

waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions and the release of other hazardous constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

The final rule for hazardous waste lamps does not require a manifest to accompany a shipment but the handler may use a manifest if he so chooses. The Agency has decided to retain the current tracking requirements in Subpart D of Part 273 for hazardous waste lamps. Under the universal waste system, hazardous waste manifests need not accompany off-site shipments of universal waste. Small quantity handlers are not required to keep records of shipments of universal waste lamps. Large quantity handlers must track waste lamp shipments by maintaining records documenting shipments received by and sent from the facility. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that are normally kept by businesses will fulfill this requirement. The Agency believes that these requirements provide consistency with the current universal waste rule and will provide implementing agencies with the information they need to ensure lamps are being managed properly.

DCN FLEP-00191
COMMENTER Utility Solid Waste Activities Group
SUBJECT UNWAS6
COMMENT VI. CRUSHING IS AN ENVIRONMENTALLY SOUND AND ECONOMICALLY PRACTICABLE FORM OF LAMP MANAGEMENT THAT MUST BE PRESERVED. EPA solicits comment on whether generators, or if the Agency selects the universal waste option, consolidation points, should be allowed to crush lamps prior to off-site management. Id. at 38297.

USWAG believes that it is absolutely imperative to preserve this management option in order to facilitate transportation, disposal and recycling by reducing the volume of materials and promoting economies of scale. The record makes clear that crushing practices can be done in an environmentally sound manner and that there is no practical reason for barring this management option.

C. Regulatory Implications of Crushing It is important that EPA clearly articulate in the final rule the regulatory implications of crushing mercury-containing lamps. Of course, this issue becomes less complicated under the MSWLF option because the management of mercury-containing lamps would fall outside of the Subtitle C system. However, if EPA selects a management scheme that keeps mercury-containing lamps within the Subtitle C system (despite the technical record that argues against this), the potential regulatory implications of crushing become more complicated. In the proposal, EPA broadly classifies crushing as treatment". 59 Fed. Reg. at 38297. While USWAG acknowledges that crushing that is undertaken intentionally to reduce the volume of a waste to render it more amenable for storage, transport or disposal is "treatment" as that term is defined by EPA (see 40 C.F.R. ' 260.10), it is important that the Agency reiterate that such "treatment" can be conducted without a permit under the so-called 90-day accumulation rule. See 40 C.F.R. ' 262.34; see also 51 Fed. Reg. 10146, 10160 (March 24, 1986). Preservation of this option under any type of Subtitle C regime (including the universal waste option) is absolutely critical to enable participants in energy-efficient relamping programs to consolidate and package lamps in an economical manner for off-site recycling or disposal.

RESPONSE

Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. 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 hazardous waste 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.

The Agency believes that including hazardous waste lamps within the scope of the universal waste rule will encourage participation in energy-efficient lighting programs because the standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00196
COMMENTER American Lighting Association
SUBJECT UNWAS6
COMMENT We are particularly concerned that the Universal Waste proposal

> prohibits lamp crushing and the exclusion is silent on it. Our members believe that a practical approach to lamp disposal often involves crushing the lamps on the generators site and transporting the crushed material volume of fluorescent lamps by greater than 90% and thus reduces storage and transportation costs. Crushing can be conducted safely with the proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow controlled crushing at off-site storage locations.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

Today=s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. 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 hazardous waste 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-00198
COMMENTER Chemical Manufacturers Association
SUBJECT UNWAS6
COMMENT D. The proposed rule does not adequately address satellite accumulation of special collection wastes such as nickel-cadmium batteries, fluorescent light bulbs, mercury switches, and aerosol cans at larger facilities. Accumulation of spent consumer products, at large quantity generator facilities, is currently subject to full Subtitle C management and therefore to the less-than-90-day accumulation provisions of '262.34. These items are used throughout large quantity generator facilities in small quantities. In particular, plants that wish to maintain generator-only status rely heavily upon the use of satellite accumulation to collect a reasonable amount of material before the 90-day time clock starts. For these facilities, there is no way to set up a satellite accumulation container to collect spent consumer products generated throughout the plant that meets the at the point of generation condition specified at '262.34(c)(1). EPA should codify the position taken by Sylvia Lowrance in her letter of February 23, 1993 to D.B. Redington to allow for a single satellite accumulation area or container for universal wastes at the facility.
RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. At the publication of the proposed hazardous waste lamps rule, the universal waste rule was also in the proposal stage of the rulemaking process. The Agency finalized the universal waste rule on May 11, 1995 (60 *FR* 25492). The Agency decided that it was not necessary to add a provision analogous to the satellite accumulation provision to the universal waste regulations. Under the universal waste regulations, handlers may already manage their wastes very similarly to management under the satellite accumulation provision. The universal waste regulations do not limit the location, or number of locations, at which a handler of universal waste may accumulate universal wastes; therefore, the handler may continue to accumulate universal wastes at points of generation or elsewhere on the site as long as they comply with the management standards under part 273. A handler may accumulate these wastes for up to one year, and may accumulate for longer than one year if necessary to facilitate proper recovery, treatment, or disposal. In addition, the quantity of universal waste that can be accumulated at any location on the site is not limited under the universal waste regulations (the satellite accumulation provision limits storage of hazardous waste to 55 gallons). Note, however, handlers that accumulate 5,000 kilograms or more of any universal wastes at any one time are subject to notification and record keeping requirements.

DCN FLEP-00200
COMMENTER Duquesne Light Company
SUBJECT UNWAS6
COMMENT DLCO also strongly supports the ability of generators to conduct material separation and consolidation (crushing) of spent lamps in an environmentally sound manner. These activities can be performed safely under appropriate conditions. Unnecessarily imposing restrictions on these activities needlessly drives up the cost of compliance. In the final rule USEPA should clarify that recycling is not the only solution for the management of all spent lamps. We do not believe that there is adequate recycling capability to accommodate the large volumes of lamps that are generated. Management of spent lamps in municipal solid waste landfills that operate under USEPA's new standards requiring leachate control systems and liners, may be more environmentally protective than some recycling facilities.
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 this rule. Spent hazardous waste lamps are one of the highest sources of mercury in the municipal solid waste stream, possibly accounting for as much as 3.8 percent of all mercury now going to municipal landfills. The Agency does not have data characterizing the behavior of mercury in different types of landfills over long time periods, although available data from shorter-term studies suggest that mercury can be, and has been

released to groundwater and air from municipal landfills. (For a more complete discussion of mercury releases from landfills and fate and transport in groundwater, see the Toxicity Section of this Response to Comments document). Data available to the Agency show that mercury can be found in municipal landfill leachate, and EPA remains concerned that landfill releases may pose threats over the long term. The Agency has concluded that some management controls are essential for these wastes.

In addition, studies also show that the greatest threat of mercury releases from the management of lamps is during storage and transport. The universal waste rule provides a reduced, or streamlined set of requirements, but also allows the Agency to set specific management standards to control potential emissions. The potential for mercury emissions and the release of other hazardous constituents occurs when hazardous waste lamps are not managed in a protective manner.

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).

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.

Today's final rule may facilitate the environmentally-sound collection and the proper recycling or treatment of spent hazardous waste lamps. Based on the belief that less complex and less costly 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-00199
COMMENTER National Association of Electric Dist.

SUBJECT UNWAS6

COMMENT Crushing. Our members are particularly concerned that the Universal Waste proposal prohibits lamp crushing and the exclusion is silent on it. We believe that a practical approach to lamp disposal often involves crushing the lamps on the generator's site and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by greater than 90% and thus reduces storage and transportation costs. Crushing can be conducted safely with the proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow controlled crushing at off-site storage locations.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps.

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 hazardous waste 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-00200
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS6
COMMENT The Department would like to propose to EPA that transportation flexibility be built in to this proposed rule, similar to Wisconsin's lamp guidance and agricultural clean sweeps. Generators may safely transport in their own vehicles. Persons other than the generator must be a licensed hazardous waste transporter to haul wastes for others. However, in no case should a manifest be required, even when the universal waste is shipped to the destination facility. This approach does not preclude the use of proper shipping documents. P. 8122, 'II.C.5; Destination Facility Requirements: The Department proposes that for storage facilities on the same property as a recycling facility, the EPA allow less stringent storage requirements if the facility is managing non-acute hazardous wastes. This would be similar to Wisconsin's approach with lamps, but tightens the requirements for someone trying to manage universal waste pesticides.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR

Part 273. Hazardous waste transporters and manifests are not required for lamp shipments between hazardous waste lamps handlers and collection points or disposal or recycling facilities. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of all universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

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, storage and disposal facilities. Although the recycling process itself is not subject to full Subtitle C regulation, any storage activities at the facility prior to recycling remain subject to hazardous waste storage permitting.

DCN FLEP-00201
COMMENTER WMX Technologies, Inc.
SUBJECT UNWAS6
COMMENT Crushing. WMX believes that a practical approach to lamp disposal may involve crushing the lamps on the generator's site and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the volume of the fluorescent lamps by greater than 90% and thus reduces storage and transportation costs. Crushing can be conducted safely with the proper controls. We recommend that the conditional exclusion include provisions for safe, on-site and off-site crushing in compliance with OSHA mercury standards. Off-site crushing should be allowed to provide options and flexibility for the generators that operate under a variety of conditions.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA decided to add hazardous waste lamps to the universal waste rule. 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 hazardous waste 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-00202
COMMENTER Union Camp Corporation
SUBJECT UNWAS6
COMMENT EPA SHOULD ALLOW CRUSHING OF LAMPS TO REDUCE VOLUME
UCC is particularly concerned that the Universal Waste proposal prohibits lamp crushing. We believe that a practical approach to lamp disposal (particularly at facilities that do not group relamp) often involves crushing lamps and transporting the crushed

debris to either a Subtitle D facility including state permitted industrial landfills or to a recycler. Crushing significantly reduces the volume of lamp debris and subsequent storage and transportation costs. When proper controls are in place lamp crushing can be conducted safely. UCC recommends that the, conditional exclusion include provisions for safe, lamp crushing on-site as well as off-site in compliance with OSHA mercury standards. Sampling of lamps for hazardous characteristics should not be required or necessary as lamps are manufactured with a high degree of consistency.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA decided to add hazardous waste lamps to the universal waste rule. 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).

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-00205
COMMENTER Florida Dept. of Environ. Regulation
SUBJECT UNWAS6
COMMENT Only for the lamps and thermometers would there be a need to modify EPA's proposed management standards. However this would only require some standards designed to minimize breakage and to properly contain any breakage that did occur. Our understanding of thermostats, switches and manometers suggests that the containers holding the mercury are very resistant to breakage.

EPA also proposed that any waste generated as a result of containing a release be managed as a hazardous waste outside of Part 273. This should not be required in all situations. For example, if a fluorescent tube bulb or thermometer has been broken and it has been contained to prevent mercury from leaking out, this waste can be handled as any other intact bulb or thermometer would be. The intact bulbs and thermometers will eventually be broken to remove the mercury and phosphor powder. As long as the broken bulb or thermometer has been properly contained and it will be properly managed at the destination facility along with the other intact wastes, there is no need that it be regulated outside of Part 273. In addition, any contaminated absorbent material would have to go through a retorting process anyway to remove the mercury from it prior to disposal.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

DCN FLEP-00208

COMMENTER Safety-Kleen Corporation

SUBJECT UNWAS6

COMMENT The Agency has requested comment on whether generators or consolidation points should be allowed to intentionally crush lamps to minimize volume for storage or shipment, and what, if any, standards should be imposed to protect against mercury releases during crushing or the subsequent management of crushed lamps. The proposed universal waste management system includes a prohibition on treatment (crushing is considered treatment) of lamps at the generator, transporter and consolidation points.

Safety-Kleen understands that the prohibition on crushing and other treatment of lamps at the generator, transporter, and consolidation points is designed to prevent the uncontrolled release of mercury-containing vapors. However, allowing lamp crushing at the generator or consolidation point, subject to collecting the vapors for subsequent reclamation and transporting the crushed lamps in containers designed to minimize releases, would be as protective or more protective of human health and the environment than transporting unbroken lamps. In fact, there are mobile technologies available that can capture the released vapors from lamp breakage for subsequent reclamation. Under the universal waste system, permitting of these mobile technologies would be infeasible, due to the inherent restrictions in the RCRA program (e.g., corrective action requirements, re-permitting at each location, etc.). There are some distinct advantages to crushing lamps and capturing the gases at an early point in the lamp management system. Mercury lamps are fragile, prone to breakage during normal shipping. Upon lamp breakage, there will be an immediate release of mercury-containing gases, followed by more gradual release of mercury as it volatilizes from the solids in the lamp. Unless the lamps are transported in sealed containers, any vapors released from in-transit breakage will released, uncontrolled, to the atmosphere. Crushed lamps take up less space and can be more efficiently transported than unbroken lamps, or even broken, uncrushed lamps. Crushed lamps can be stored and transported in the same type of packaging required under the proposed regulation for broken lamps (40 CFR 273.31(b)(2), 273.32(a)(1)(ii), and 273.33(a)(2)). Transport of crushed lamps in containers designed to minimize releases is protective of human health and the environment.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment.

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 hazardous waste 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-00208

COMMENTER Safety-Kleen Corporation
SUBJECT UNWAS6
COMMENT Safety-Kleen strongly recommends that the proposed regulation be revised to allow crushing of lamps at the generator or consolidation point, as long as the released vapors are collected for reclamation. The glass could then be land filled, reused, or subject to mercury reclamation in accordance with the applicable regulations. In order to encourage reclamation of mercury to the fullest extent possible, the on-site crushing activity should be controlled under the RCRA Subtitle D regulations, rather than under Subtitle C. By requiring on-site crushing operations to have vapor collection for reclamation, the rule would encourage mercury vapor reclamation while reducing the environmental and human health risks associated with transport of mercury lamps.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. 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). The Agency does not believe that setting standards for crushing under Subtitle D is protective. In addition, it would not be consistent with the existing universal waste program.

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-00309
COMMENTER Bethlehem Apparatus Company
SUBJECT UNWAS6

COMMENT 2. Crushing of Lamps At its facility, Bethlehem employs a Lamp crusher which is affixed to a 55-gallon drum. The crusher crushes the four and eight-foot Lamps, which have been shipped to the facility in cardboard boxes or fiber drums, into tiny pieces, thereby significantly reducing the original volume of the Lamps to be retorted. When approximately full, the 55-gallon drums are placed into the retort for the recovery of mercury. An air filtration device is affixed to the crusher and captures any mercury vapor which is liberated during the operation of the crusher, thereby protecting the workers who operate the device, in accordance with OSHA standards. The air filter is replaced at regular intervals and retorted to recover the mercury. The air filter is reusable. Bethlehem believes that Lamp crushing can be conducted in an environmentally-sound manner which is fully protective of worker health and safety. If conducted properly and with the right equipment, crushing could be conducted by Generators and Consolidation Points as well as Destination Facilities.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste rule, 40 CFR Part 273. 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 hazardous waste 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.

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, storage, and disposal facilities. Any crushing activities at destination facilities (that are not part of the recycling process) remain subject to hazardous waste treatment permitting.

DCN FLEP-00234
COMMENTER Minnesota Mining and Manufacturing (3M)
SUBJECT UNWAS6
COMMENT Packaging: Hazardous wastes must be shipped in containers that meet the United States Department of Transportation (DOT) requirements for performance packaging. Currently, 3M is not aware of any packaging system that would meet these stringent requirements (e.g., drop test). If fluorescent lamps remain classified as a hazardous waste, then most, if not all, generators would be in violation of the DOT packaging requirements. If the packaging requirements are different for generators and consolidation points, then consolidation points would be forced to repackage the lamps in DOT- approved containers (which are not available) prior to shipment to a destination facility. This would be extremely burdensome, very costly, and would increase the potential for breakage and related exposure. 3M recommends that lamps be non-regulated and be simply packaged in a manner that would minimize breakage

during handling and transit. Labeling: Labeling requirements should also be identical for both generators and consolidation points. Otherwise, consolidators would be forced to re-label the lamps as a hazardous waste even though there had been no change in the lamps' physical or chemical characteristics. Again, one standard should apply.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers.

The Agency agrees with the commenter regarding consistent labeling requirements. Each lamp or container or package of lamps must be labeled or marked clearly with one of the following phrases: AUniversal Waste-Lamp(s),@ or AWaste Lamp(s),@ or AUsed Lamp(s).@

The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of lamp management. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes flexible packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00234
COMMENTER Minnesota Mining and Manufacturing (3M)
SUBJECT UNWAS6
COMMENT 5. 3M does not promote the option of crushing lamps prior to treatment or disposal. 3M does not approve of crushing lamps prior to treatment or disposal due to the increased risk to human health and the environment. 3M acknowledges that there is commercially available equipment which has adequate controls for the protection of human health and the environment. However, equipment that is not operated properly, or is poorly maintained, will increase the risk of exposure. If crushing is to be allowed, then strict requirements should be placed on the emissions controls system, maintenance, and operation of such equipment.
RESPONSE
The Agency agrees with the commenter regarding crushing. Today=s rule adds hazardous waste lamps to the universal waste rule in 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).

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 treat, or 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-00238
COMMENTER Energy Specialties, Inc.
SUBJECT UNWAS6
COMMENT The universal waste provision prohibits crushing which is the most practical approach to disposal. Crushing reduces storage

and transportation costs for the generator and can be done safely with proper oversight. Crushing should be included in the conditional exclusion.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00239
COMMENTER National Sign Association
SUBJECT UNWAS6
COMMENT VI.Specific Comments on Crushing NESA is particularly concerned that the Universal Waste System proposal prohibits lamp crushing and the proposed conditional exclusion is silent on the subject. NESA believes that a practical approach to lamp

disposal (especially given the large size and unusual shapes of many of NESA Members' lamps and signs) often involves on-site crushing and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the lamps' volume by greater than 80% and, thus, reduces the storage and transportation costs. NESA believes that crushing can be conducted safely, with the proper controls and that EPA's regulations should permit it. NESA strongly recommends that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow controlled crushing at off-site storage locations. NESA also disagrees with any requirement to "immediately" contain broken lamps. It is totally impractical to expect that whenever a fluorescent lamps is inadvertently broken, it will be "immediately" contained. The requirement should be "as soon as practicable." This is especially true since it is extremely rare to service a sign that does not already have the remnants of broken lamps inside it. Also, given the odd sizes of some of the NESA lamps some handling will be almost always be necessary. Of course, breakage should be minimized but a total prohibition should not be imposed because breaking may be necessary for appropriate transport of some of NESA Members' larger lamps. In addition, shipping intact lamps in protective packaging would result in shipping a large volume of "air" at greatly increased costs. This last comment also applies to landfilling lamps in protective packaging as well -- that requirement would mean landfilling large amounts of paper and air.

RESPONSE

Today=s final rule adds hazardous waste to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste *must immediately* contain all releases of universal waste and any residues from universal wastes because mercury vapor can be released. Therefore, the Agency believes releases must be contained Aimmediately@ to protect human health and the environment. In addition, universal waste handlers must determine whether

any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.
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).

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-00240
COMMENTER Luminaire Service, Inc.
SUBJECT UNWAS6
COMMENT As generators of the waste and/or representatives of the generators of waste, Luminaire Service would like to see record keeping requirements mandated for the transporters to document the delivery to designated facilities. We would also like to see packaging requirements for the safe transportation and storage of the waste. We are ultimately responsible for the waste and these requirements will protect my interests and those of other generators by regulating the end destination of these wastes.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations. The regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could

cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms in total of all universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. The record may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps. Note, a universal waste handler may continue to use the hazardous waste manifest if he so chooses.

DCN FLEP-00256
COMMENTER Ford Motor Company
SUBJECT UNWAS6
COMMENT Lamp Crushing. The Agency requests comment (59 FR 38297) on whether generators or consolidation points should be allowed to intentionally crush lamps and what standards should be imposed to protect against releases. The proposed universal waste management system (Option 2) includes a prohibition on treatment, but does not present any rationale for this prohibition. Several states already encourage the on-site management of spent fluorescent lamps via commercial tube crushers. These commercial crusher units have dramatically improved in the last few years to include dust and mercury vapor capture cartridges. There are various makes and models of lamp crushers which filter during the crushing process and collect the mercury/phosphor residue in cartridge-type filters. The use of these vacuum cartridge-filter systems have been evaluated for operator personnel exposure to mercury and results of mercury vapor emission testing indicate levels well below the OSHA (Permissible Exposure Limit) PEL limit of 0.05 mg/M3 (See Attachment 4). Analyses (Attachment 5) of the glass after crushing show it to be nonhazardous, leaving only the spent cartridge filter to be managed as a hazardous waste. The glass can then be landfilled at a much reduced volume (and cost) or recycled. According to prior U.S. EPA interpretations and

policy, treatment can be conducted in a less than 90-day container without a RCRA permit provided the generator complies with 40 CFR 262.34(a). This option also has the benefit of providing significant waste minimization opportunities. Suggested standards applicable to crushing might include 1) a requirement to maintain documentation of manufacturers' performance claims relative to mercury emissions, 2) a requirement to document that employees using the crusher are properly trained in its operation and maintenance, and 3) a requirement to maintain records of the number of lamps crushed and dates of cartridge filter change-out to assure proper operation/maintenance of the unit. Further, with respect to the LDRs, EPA should consider eliminating or reducing the requirement for a formal Waste Analysis Plan ['268.7(a)(4)] or including lamp crushing as an alternative treatment standards for hazardous debris [Table 1, '268-451. Lamp crushing is a viable, cost-effective, and environmentally sound option for lamp management which should not be prohibited. The Agency should not prohibit crushing as a part of any lamp management option, but should further evaluate crushing and establish appropriate standards for incorporation into the management option(s) selected. This information supports the fact that crushing lamps using a vacuum and filter system reduces the potential for mercury vapor emissions, thus offering a management option for both of the proposed rules in the subject Federal Register. Intentional crushing in the proposed exclusion management option offers a potential to reduce the mercury levels in the crushed lamp residue that would be sent to a MSW landfill. Waste characterization (TCLP) conducted on the crushed lamp residue typically does not exceed the established RCRA limits. The mercury is captured by the -filter system and managed as a hazardous waste. TCLP results from a typical filter system range between 200-300 mg/kg. This approach could allow for management of the lamp residue as non-hazardous while the recovered mercury from the spent lamps would be managed as hazardous waste destined for reclamation by retorting -or treatment and disposal by Subtitle C requirements. This option may provide for added protection of human health and safety.

Storage Prior to Crushing under Current Subtitle C Requirements
Currently, storage of any hazardous waste for less than 90 days must be in containers, tanks, drip pads or containment buildings

in accordance with '262.34(a). However none of these means of storage is particularly well suited to the storage of fluorescent lamps. If they are stored in containers, the containers must be kept closed to be in compliance with '265.173. The intent of this requirement, when initially promulgated, was to prevent spillage and volatilization of hazardous wastes. Since neither of these concerns are applicable to intact bulbs, EPA should clarify that storage of intact spent bulbs in containers prior to subsequent recycling or disposal are not subject to the closed container requirement EPA might rationalize such a clarification by stating that intact bulbs in themselves be considered closed containers. Alternatively, EPA could establish specific storage standards for spent lamps in '262.34(a) such as was done for storage of wood preserving wastes on drip pads. In the event the Agency does not establish a management option that is effective in all States, clarification will be needed for state agencies and the regulated community that spent bulbs are not required to be stored in compliance with the requirements of '265.173.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 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). The Agency does not believe that setting standards for crushing under Subtitle D is protective. In addition, it would not be consistent with the existing universal waste program.

Some commenters to the proposed spent hazardous waste 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.

Today=s standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

Today's final rule may reduce much of the current confusion over the regulatory status of spent lamps, at least at the federal level; however, individual states may have more stringent requirements for the management of this waste. The Agency notes that many States have already adopted or are considering adopting universal waste standards for spent lamps. Since this rule is not promulgated pursuant to HSWA it is applicable on the effective date only in States that do not have final RCRA authorization. Authorized states that wish to adopt this rule will have to seek authorization for the adoption of spent lamps to their universal waste programs. States are not required to adopt less stringent regulations, and therefore, need not adopt the universal waste

regulations for spent lamps. However, EPA strongly encourages them to do so, not only to achieve the most benefits of the universal waste program but also to reduce the complexity of interstate transportation of these universal wastes.

DCN FLEP-00256
COMMENTER Ford Motor Company
SUBJECT UNWAS6
COMMENT The management of the spent lamps should minimize lamp breakage.

> The marking of accumulation dates-on individual lamps, or even per box, would create additional handling and opportunity for unintentional breakage, as well as make compliance demonstrations more difficult. Also, labels on individual lamps would render them more difficult to recycle and would create an additional wastestream at the reclamation facility. Since lamp boxes could be placed on pallets for storage prior to shipment, an additional option of either marking/labeling the pallet with a date or including a. particular pallet in an inventory system should be included as an additional option for demonstrating compliance with the one-year storage limitation.

RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards.

Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

The final rule requires that universal waste handlers of hazardous waste lamps comply with one of the following to demonstrate compliance with the accumulation time limit: mark the container holding the lamp, mark the individual lamp, maintain an inventory system, place the lamps in a specific storage area marked with the earliest date identified, or use any other method which demonstrates the length of time that the lamp has been accumulated from the date the lamp becomes a waste or is received. These labeling requirements should provide enough flexibility to address the commenter=s concerns.

DCN FLEP-00271
COMMENTER RTC Marketing of Ohio

SUBJECT UNWAS6
COMMENT WE ARE CONCERNED ABOUT THE LACK OF REGULATORY REQUIREMENTS FOR CONSOLIDATION POINTS. WE ARE UNLIKELY TO SEND OUR SPENT LAMPS TO THEM DUE TO LIABILITY CONCERNS.
RESPONSE
The final rule for hazardous waste lamps does not contain a separate category for consolidation points. EPA is including hazardous waste lamps within the universal waste regulations under 40 Part 273. At the publication of the proposed lamp rule, the universal waste rule was also in the proposal stage of the rulemaking process. As a result, the Agency chose to design the regulations for lamps in a manner that was consistent with the proposed universal waste rule. The proposed universal waste rule, and subsequently the proposed lamps rule, categorized regulated persons managing universal waste into four types: generators, consolidation points, transporters, and destination facilities. When the final universal waste rule was published, the Agency modified the four categories. The transporter and destination facility categories were retained essentially as proposed. However, the persons who would have been included in the generator and consolidation point categories were merged to create two new categories of participants: small quantity handlers of universal waste (SQHUWs) and large quantity handlers of universal waste (LQHUWs). In today=s hazardous waste lamps final rule, the Agency has decided to remain consistent with the existing universal waste regulations and retain the four categories of participants that were finalized in the universal waste rule. Consolidators are subject to the universal waste handlers standards. It should also be noted that handlers can choose to send their universal waste lamps directly to a destination facility if they so desire.

DCN FLEP-00272
COMMENTER Detroit Edison Company
SUBJECT UNWAS6
COMMENT Generator crushing of used lights is critically important if costs of handling the waste are to be at all within reason, whether the EPA chooses the conditional exclusion option or the universal waste option. It should be noted that there is presently an issue in Michigan regarding the acceptability of generator crushing of used lights because Michigan contends that this is treatment and claims that their regulations, unlike the federal regulations, do not allow generator treatment without a permit. This compounds the problem of handling the waste and further discourages accelerated change out of inefficient lighting. The record makes clear that crushing practices can be done in an environmentally sound manner and there is no practical reason for barring this management option. It is recognized that there are a variety of crushing technologies available, some better than others. Detroit Edison supports the use of the more advanced crushers with adequate filters to

minimize any opportunity for release of mercury, but it should be noted that mercury monitoring around even the least sophisticated model while in operation did not reveal mercury levels in excess of the OSHA standards. As indicated by the recycling/disposal cost discussion in the previous paragraph, the ability of a generator to crush used bulbs is critical to keeping costs at a level which will not discourage accelerated change out of inefficient lighting.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste rule in 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 hazardous waste 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.

The Agency believes that including spent lamps within the scope of the universal waste rule will encourage participation in energy-efficient lighting programs because standards are less stringent and less costly than full Subtitle C management standards. A significant number of commenters indicated that savings from reduced energy usage more than covers the cost of managing lamps as hazardous waste. Reduced management costs associated with the final hazardous waste lamps rule should encourage additional participation in energy-efficient lighting programs and increase recycling of lamps.

DCN FLEP-00276
COMMENTER Nine West Technologies, Inc.
SUBJECT UNWAS6
COMMENT It would seem appropriate to relax some of the Part B requirements for a facility which only recycles lamps. While Best Management Practices, recording of shipments in and out, site security, and industrial hygiene regimes are vital, certain requirements seem to be more onerous than necessary. Indeed, this fact is recognized by EPA in the discussions of the proposal. In the case of intact lamps, packaging is a particular area which could be done with existing manufacturers' cartons rather than DOT drums. International Air Transport Regulations (IATA) allow this for shipments of lamps containing levels requiring a Declaration of Dangerous Goods. It would seem that truck transport could certainly follow IATA.
RESPONSE
Today=s rule adds hazardous waste lamps to the universal waste rule in 40 CFR Part 273. The universal waste rule ensures that mercury emissions and the release of other hazardous constituents are minimized during all stages of hazardous waste lamp management. The universal waste 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. 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, storage, and disposal facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment, storage

and disposal 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, hazardous waste lamps can be safely recycled and mercury and other hazardous waste constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since it is in the recycling facility's best economical interest 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 must still comply with all applicable Clean Air Act requirements and all applicable worker safety standards under OSHA.

The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. However, the Agency is not specifying the type of packaging required. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

DCN FLEP-00276
COMMENTER Nine West Technologies, Inc.
SUBJECT UNWAS6
COMMENT We support the Agency's position regarding on-site grinding of lamps. Our own studies and those of others show that use of drum type crushers can result in exceeding of OSHA limits. Maintenance and repair seem to indicate that there is a potential for leakage. OSHA regulations as well as treatment regulations should be enforced in this area.
RESPONSE
The Agency agrees with the commenter that crushing is treatment. 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).

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-00286
COMMENTER Creative Lighting, Inc.
SUBJECT UNWAS6
COMMENT The proposed prohibition of lamps crushing again creates a monster bigger than the one it eliminates. The cost for transportation of lamps in the un-crushed state will be so high that it will ultimately cause vast storage of unrecycled or resold lamps. If crushing is done to proper OSHA safety standards and the crushed lamps are safely standards and the crushed lamps are safely transported these will be no significant negative impact on emissions or spillage. Ultimately all recycled lamps are crushed at there storage of recycler facilities and crushing at the generator site or storage site will have a more positive effect on voluntary lamp disposal compliance. The only long term solution to the ultimate long term public safely from lamp waste is to ensure that the recyclers are carefully monitored and controlled. They will handle such a significantly larger quantity of wastes that an individual lighting firm like ours will generate. They must be responsible for the complete waste management of lamps they receive and they must ensure that its recycling and re-use operations are safe, that their emissions during recycling are in compliance and that their work place safety standards for mercury exposure be applied.
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 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).

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.

Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp handlers and collection points or disposal or recycling facilities. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

The universal waste rule ensures that mercury emissions are minimized during all stages of lamp management. The universal waste 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. 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, storage, and disposal facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment, storage, and disposal 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, hazardous waste lamps can be safely recycled and the mercury reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since 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.

A number of commenters, including both lamp manufacturers and mercury lamp recycling facilities, supported container and/or packaging standards to minimize lamp breakage during accumulation, storage, and transport. Lamp recycling facilities in particular voiced a preference for spent lamps to be stored and transported in packaging that protects the spent lamps from potential breakage. Commenters representing recycling facilities pointed out that proper packaging that protects spent lamps from breakage will protect against releases of mercury to the environment prior to receipt of the lamps at recycling facilities. These commenters stated that lamp recycling facilities prefer to receive intact, unbroken lamps so that the lamps can be crushed in a closed, controlled environment at the recycling facility to allow for the capture and recycling of the available mercury. In addition, commenters pointed out that broken lamps and potential releases of mercury and other hazardous constituents from broken lamps pose worker safety issues for recycling facility employees. Commenters representing both lamp manufacturers and lamp recyclers recommended that intact lamps be stored in original cartons or specially designed containers (e.g., fiber containers with closed lids) that will protect the spent lamps from breakage. Commenters pointed out that unintentionally broken lamps should be stored and transported in closed drums or other puncture-proof containers that are sealed and properly labeled. Recycling facilities remain subject to applicable OSHA workplace standards and Clean Air Act emission standards.

DCN FLEP-00294
COMMENTER El Paso Natural Gas Company
SUBJECT UNWAS6
COMMENT Request for Clarification. In the proposed universal waste management system for spent mercury-containing lamps, consolidation of spent lamps at centralized locations is allowed. Manifesting and use of hazardous waste transporters are not required to move the spent lamps from the point of generation to the point of consolidation. Hazardous wastes generated by a conditionally exempt small quantity generator (CESQG) are likewise not required to be manifested or transported by a hazardous waste transporter. When CESQG wastes are generated at remote locations, the use of consolidation points to accumulate these wastes is an environmentally sound approach equivalent to the concept of consolidation being proposed for management of spent mercury-containing lamps. El Paso requests clarification regarding the use of consolidation points to accumulate CESQG hazardous wastes.
RESPONSE
Today=s final rule allows universal waste lamps to be accumulated and stored at consolidation points. Under the final rule, consolidation points are regulated as universal waste handlers. The

Agency clarifies that manifests are not required for shipments of universal waste lamps between hazardous waste lamp handlers, whether acting as generators or collection points, or for shipment to destination facilities. However, the universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers. Large quantity handlers (those who accumulate more than 5,000 kilograms of total universal waste at one time) are required to keep records of each shipment of hazardous waste lamps received and keep records of each shipment of lamps sent off-site. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that would normally be kept by any business will fulfill this requirement. Records must be retained for at least three years from the date of receipt of a shipment of lamps or the date a shipment of lamps left the facility. Small quantity handlers (those who accumulate 5,000 kilograms or less of total universal waste at one time) are not required to keep records of shipments of hazardous waste lamps.

Under RCRA, generators who generate no more than 100 kg per month of hazardous waste are conditionally exempt small quantity generators (CESQGs) and are excluded from the Subtitle C hazardous waste management requirements under 40 CFR ' 261.5. Today's final rule governing the management of spent hazardous waste lamps does not affect this provision. Generators who generate less than 100 kg per month of hazardous waste, and whose generated waste includes spent hazardous waste lamps are conditionally exempt from RCRA regulatory provisions. Such generators are not required to comply with the management provisions finalized today for spent lamps. These generators may, however, be subject to applicable state regulations, which may be more stringent than the federal regulations governing small quantity generators. It is beyond the scope of this rulemaking to address other aspects of the CESQG regulations.

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT UNWAS6
COMMENT The requirement to obtain a Part B permit would also probably discourage development of new facilities. For this reason, facilities recycling lamps should be exempt from the permit requirement, provided they recycle lamps in reasonable time and manage wastes they generate accordingly. We also advise deleting the requirement for lamps to be managed in accordance with all applicable Subtitle C requirements at the point lamps are delivered to the end destination facility. Appropriate management standards should suffice in assuring that lamps are handled properly and do not pose a threat to health and the environment. Ohio EPA's recommendations for storing and handling fluorescent lamps are detailed in the attached fact sheet (The Management of Fluorescent Lamps and Ballasts In Ohio) .
RESPONSE

The Agency appreciates the commenter=s input. Today=s final rule adds hazardous waste lamps to the universal waste regulations under Part 273. The universal waste rule ensures that mercury emissions and release of any other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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. 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, storage and disposal facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment, storage, and disposal 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, hazardous waste lamps can be safely recycled and the mercury and other hazardous constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since 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.

DCN FLEP-00296
COMMENTER State of Ohio EPA
SUBJECT UNWAS6
COMMENT Containerization/packaging - Steps should be taken to ensure that fluorescent lamps remain intact from generation to recycling to minimize potential threat to human health and the environment through exposure and contamination by mercury. Thus, minimum package standards and accidental breakage protocols should be instituted. Crushing of lamps should involve a process or device which would minimize or contain toxic materials that would otherwise be released into the environment. The crushed material must be acceptable for recycling by the receiving facility; or the material may be segregated and delivered to the end user.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other

hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

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).

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-00296
COMMENTER State of Ohio EPA
SUBJECT UNWAS6
COMMENT Generator/Consolidation point storage/handling requirements under the special collection system option - Unless each lamp in storage is dated as to when the lamp became a waste, it will be difficult for Ohio EPA inspectors to sort through large quantities of lamps to verify compliance with the one- year time limit. Each lamp should be dated once it is removed from the lamp fixture (or discarded).
RESPONSE
Universal waste handlers may accumulate universal waste lamps for one year. The regulations also allow for accumulation for more than one year if such accumulation is solely for accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper

recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

The final rule requires that universal waste handlers of hazardous waste lamps comply with one of the following to demonstrate compliance with the accumulation time limit: mark the container holding the lamp, mark the individual lamp, maintain an inventory system, place the lamps in a specific storage area marked with the earliest date identified, or use any other method which demonstrates the length of time that the lamp has been accumulated from the date the lamp becomes a waste or is received. Although the labeling requirements are flexible in that handlers are not required to label each lamp, storage areas or containers used to accumulate lamps must be marked with the earliest date in which any lamps were placed in the container to facilitate documentation and verification of total accumulation time.

The Agency notes that the universal waste standards apply only to hazardous waste lamps that are hazardous wastes. For a waste to be a hazardous waste, it must first be a solid waste. A used hazardous waste lamp becomes a waste on the date that it is discarded. In addition, an unused hazardous waste lamp becomes a waste on the date a handler decides to discard it.

DCN FLEP-00297
COMMENTER Florida Dept. of Environ. Protection
SUBJECT UNWAS6
COMMENT Generators and Consolidation Points. The Department disagrees with the EPA's contention that shipments of MCLs [mercury-containing lamps] are more likely to be made from generators directly to destination facilities. Most generators do not have the storage area to store large numbers of lamps currently proposed to be allowed by the EPA for accumulation. Due to the consolidation that would need to occur to make the transportation costs as economical as possible, it is more likely that MCLs will be picked up by transporters from several generator locations, consolidated and then shipped to the destination facility. The Department does believe that generators should be allowed to crush their own lamps as is currently allowed under the EPA's interpretation of allowing generators to treat hazardous waste during accumulation in containers or tanks. However, the Department does plan on requiring a permit from such generators to show that they know how to properly use such equipment and that mercury emissions are properly controlled. In a similar vein, generators or consolidation points should also be allowed to remove the mercury-containing ampules from HID lamps and MCDs [mercury-containing devices] without being required to have a

> permit, since this is a very low risk operation (the outer glass shell of a HID can be easily removed and ampules are very resistant to breakage). Without having this option, generators and consolidation points handling HIDs or MCDs would be faced with very high costs for their processing ($1 - $2 per HID) or for permitting. A generator or consolidation point is bound to accidentally break some MCLs [mercury-containing lamps] during the normal handling and storage of those lamps. As long as the lamp residues are immediately cleaned up and contained in an appropriate container, these broken MCLs should also be allowed to be sent to a consolidation point or destination facility without manifesting. All mercury reclamation facilities, some just as easily as for intact lamps, would be able reprocess such broken lamps using the same equipment as for intact lamps. Our research and contacts with operating MCL recycling facilities have shown that the MCL recycling industry is continuing work on process modifications to economically handle broken lamps. The training requirements for generators and consolidation points storing small amounts of MCLs [mercury-containing lamps] are not clearly specified. only minimal training should be required for personnel at these locations that actually handle the MCL and this should be just for properly handling, packaging, and containing releases from accidentally broken lamps.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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.

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 hazardous waste 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.

Management costs under the universal waste system approach would be lower than full Subtitle C management because hazardous waste transporters and manifests would not be required for lamp shipments between hazardous waste lamp generators and collection points or disposal or recycling facilities. The universal waste rule includes a basic record keeping requirement to track waste shipments arriving at and leaving from large quantity handlers.

Today=s standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally

sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272. Broken lamps remain subject to the universal waste regulations finalized today as long as they are stored properly.

Lastly, the universal waste regulations do not require formal training for facility employees, but do require that employees at large quantity handler facilities are thoroughly familiar with proper waste handling and emergency procedures related to their responsibilities, and employees at small quantity handler facilities be informed of the proper handling and emergency procedures appropriate to the types of universal waste being handled. The Agency believes that a basic employee training requirement is necessary to ensure that employees are specifically familiar with waste handling procedures. Training that is required under other programs (e.g., OSHA, RCRA Subtitle C) will most likely meet the Part 273 training requirements.

DCN FLEP-00297
COMMENTER Florida Dept. of Environ. Protection
SUBJECT UNWAS6
COMMENT Finally, destination facilities, which are processing for or recycling MCL or MCD components, should not be required to be permitted under the Subtitle C hazardous waste permitting requirements. The EPA should consider the recommendations of its Definition of Solid Waste Task Force which has proposed Category D requirements for commercial off-site recycling facilities, and of the Coalition of Lamp Recyclers which has cone up with Best . Management Practices for MCL [mercury-containing lamp] recycling facilities. The Department strongly believes it is possible to have protective permitting requirements for recycling facilities without then having to be exactly like the hazardous waste permitting requirements. The EPA could lead the way in establishing national model permitting standards that are protective and that help to minimize the costs of recycling universal wastes.
RESPONSE
The universal waste rule ensures that hazardous waste lamps emissions are minimized during all stages of lamp management. The universal waste 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. 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, storage, and disposal facilities. Although destination facilities are subject to RCRA Subtitle C hazardous waste management requirements for treatment, storage and disposal 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, hazardous waste lamps can be safely recycled and mercury and other hazardous waste constituents reclaimed. In addition, the Agency believes that recycling facilities will guard against excessive mercury emissions since 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.

Hazardous waste recycling facilities that do not store hazardous wastes prior to recycling may be exempt from permitting under federal regulations (40 CFR 261.6(c)(2)).

DCN FLEP-00301
COMMENTER Minnesota Pollution Control Agency/MOEA
SUBJECT UNWAS6
COMMENT (2) We support a prohibition on lamp crushing as treatment.
Regulating the use of portable crushers would be impossible.
Further, operation of portable crushers in accordance with OSHA
regulations will not ensure that mercury is controlled, since
OSHA regulations apply only to worker exposure and not to
environmental releases.
RESPONSE
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).

The Agency is not allowing crushing of hazardous waste lamps under federal regulations. States are free to prohibit crushing as well. However, the Agency is allowing for the possibility that 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-00302
COMMENTER Conserve Electric Company, Inc.
SUBJECT UNWAS6
COMMENT The universal waste approach was not designed for fragile wastes whose risks arrived from air emissions due to breakage. Rather, it was designed for relatively sturdy wastes that could withstand the rigors of large-scale accumulation and transport. Our company is particularly concerned about the lack regulatory requirements for consolidation points and is unlikely to send our spent lamps to them due to liability concerns.
RESPONSE
The final rule for hazardous waste lamps does not contain a separate category for consolidation points. EPA is including hazardous waste lamps within the universal waste regulations under 40 Part 273. When the final universal waste rule was published, the Agency modified the four categories of regulated parties. The transporter and destination facility categories were retained essentially as proposed. However, the persons who would have been included in the generator and consolidation point categories were merged to create two new categories of participants: small quantity handlers of universal waste (SQHUWs) and large quantity handlers of universal waste (LQHUWs). In the hazardous waste lamps final rule, the Agency has decided to remain consistent with the existing universal waste regulations and retain the four categories of participants that were finalized in the universal waste rule. Consolidators are subject to the universal waste handler standards. It should be noted that a handler could choose to send his hazardous waste lamps directly to a destination facility if he so desires.

Hazardous waste lamps conform to a number of factors that were used to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The factors, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous wastestreams; g) regulation of the waste as a universal

waste should improve implementation of and compliance with the hazardous waste regulatory program.

DCN FLEP-00304
COMMENTER A&K Service Corporation
SUBJECT UNWAS6
COMMENT The universal waste approach presents us with another set of problems. As stated earlier in this letter, A&K believes that the risk of harm to the environment would increase significantly if we are forced to accumulate very large quantities of intact lamps for disposal. The universal waste program was designed to accommodate less fragile wastes whose danger was not a direct result of air emissions caused by breakage. Our company is concerned about liability problems arising from the transport of these lamps to what could be considered an insufficient amount of consolidation points.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and other hazardous constituents are minimized during all stages of lamp management. The universal waste 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. The Agency notes that all parties can still be held liable for releases of hazardous constituents from hazardous waste, regardless of the management requirements under RCRA.

Allowing handlers of spent lamps to accumulate the lamps for longer periods of time will not necessarily increase opportunities for environmental problems, as the commenter states. The universal waste rule includes storage and packaging standards to prevent uncontrolled and unintentional breakage of lamps. The Agency believes that today's final rule may facilitate the environmentally-sound collection and increase the proper recycling or treatment of spent hazardous waste lamps.

Hazardous waste lamps conform to the criteria to determine if a hazardous waste would fit into a universal waste management regulatory program and if the streamlined standards of the universal waste program would improve the overall management of the waste. The criteria, which are codified at 40 CFR 273.81, include a) the waste must be a hazardous waste generated by a wide variety of generators; b) the waste, or category of waste, should not be exclusive to a particular

industry but must be generated by a wide variety of establishments; c) the waste should be generated frequently, but in relatively small quantities; d) systems to be used for collecting the waste should ensure close stewardship of the waste; e) the risks posed by the waste during accumulation and transport should be relatively low compared to the risks posed by other hazardous waste and specific management standards would be protective of human health and the environment during accumulation and transport; f) regulation of the waste under the universal waste rule should result in the diversion of the waste from management with non-hazardous wastestreams; g) regulation of the waste as a universal waste should improve implementation of and compliance with the hazardous waste regulatory program.

DCN FLEP-00305
COMMENTER Sierra Club National Solid Waste Comm.
SUBJECT UNWAS6
COMMENT Greater control over the transportation and storage of waste lamps, as provided under the universal waste rule, is essential. Consideration might be given to arrangements for collection that would permit breaking of lamps under regulated conditions with appropriate safety standards, with shipping of the mercury-containing material in sealed containers. For large producers, this could be a cost-effective alternative that would promote recycling of mercury. Packaging requirements for transportation of broken lamps should specify the maximum amount that can be released, rather than just "minimize releases."
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations in 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The Agency is not specifying the maximum amount of hazardous constituents that can be released as part of its packaging requirements. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes

packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions and the release of other hazardous constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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).

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-00306
COMMENTER Lighting Maintenance and Service, Inc.
SUBJECT UNWAS6
COMMENT Another issue with the universal waste disposal which causes concern is that it prohibits lamp crushing and the exclusion is silent on it. We believe that a practical approach to lamp disposal will require crushing lamps on the generators site and transporting the crushed material to either subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by 90% and consequently reduces transportation and storage costs. Crushing can be done safely with proper management. We advocate provisions for safe, on-site (and for flexibility; off-site) crushing in compliance with OSHA mercury standards be included in the conditional exclusion.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. 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).

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-00309
COMMENTER Bethlehem Apparatus Company
SUBJECT UNWAS6
COMMENT B. SUGGESTED MODIFICATIONS TO OPTION 2

Bethlehem supports the adoption of Option 2 but believes that certain modifications should be made in order to provide the most efficient and environmentally sound recycling system. With these proposed modifications, mercury in the Lamps will be recovered to the greatest extent possible and in the most environmentally sound manner. 1.Packaging Requirements a. Boxes One of the current problems identified by EPA and experienced in the industry is the shipment of Lamps in inappropriate containers. A common method of shipment includes the reuse of the cardboard boxes in which the new Lamps were provided to the consumer. The interstitial packaging material used to protect the new Lamps from breakage in shipment however, is often absent in the return shipment for waste processing. Instead, the boxes are over-packed with lamps, resulting in approximately 10% breakage of the Lamps in transit to the recovery facility. Breakage obviously results in the potential for releases of mercury and mercury vapor into the box, truck or recovery facility. This result must be avoided and can easily be prevented. Bethlehem proposes that EPA adopt, by reference to Department of

Transportation standards, standard minimum requirements for containers used to ship Lamps for recycling. In particular, DOT Packing Group III standards should be applied and a regulation adopted which requires the Lamps to be packed internally in such a fashion as to prevent breakage. b. 55-Gallon Drums Bethlehem believes that the preferred method of shipment of Lamps involves the use of a sealed 55 gallon drum, into which the Lamps have been crushed. (See discussion of crusher in B. below). The use of a drum eliminates the concern over Lamp breakage by virtue of the drum being a fully-contained vessel. At Bethlehem, the drums themselves are placed in the retort and the entire drum is retorted, recapturing all of the mercury which spills into the drum as a result of crushing. The use of drums is also more efficient because it consolidates a much larger number of Lamps into one container. For example, only approximately 60 four-foot Lamps can be shipped in a standard 12" x 12" x 4' box whereas 625 crushed Lamps can be shipped in a drum. In addition, the use of a crusher and drum mechanism solves the problem of shipment of eight-foot lamps, which comprise approximately 10% of the Lamps processed by Bethlehem. Unlike four-foot Lamps, eight-foot Lamps are not easily packed onto standard sized (4' x 4') pallets because they extend over the pallets by two feet in each direction. As a result, eight-foot Lamps are more susceptible to breakage during transit.

5. Management Controls, p. 38,296, col. 3. P. 38,297, col. 1. As stated above, Bethlehem supports packaging requirements in the form of steel drums or DOT Class III equivalent cardboard or fiberboard packaging which avoids internal breakage. Bethlehem supports the use of crushers by generators, Consolidation Points and Destination Facilities. Inadvertently broken Lamps should be placed in drums.

RESPONSE

Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste regulations include packaging requirements for universal waste lamps. These provisions require that lamps be packed to minimize breakage and packaging materials be designed to contain potential releases due to breakage during transport. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, adequate to prevent breakage, compatible with contents of lamps, and lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Universal waste lamp handlers also must contain any universal waste lamps that show evidence of

breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. Prior to shipment off-site, handlers must store spent lamps in a manner that minimizes breakage and prevents releases of mercury to the environment in the case of unavoidable breakage.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions and the release of other hazardous waste constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

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).

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.

Under the universal waste rule, destination facilities (i.e., recycling facilities, treatment, and disposal facilities) are subject to all hazardous waste management requirements applicable to permitted or interim status hazardous waste treatment, storage, and disposal facilities. Any crushing activities at destination facilities (that are not a part of a recycling process) are subject to hazardous waste treatment permitting requirements.

DCN FLEP-L0005

COMMENTER Massachusetts Energy Efficiency Council
SUBJECT UNWAS6
COMMENT Third, we urge the EPA to provide detailed guidelines for the handling, storage, and transportation of spent fluorescent lamps. Given the size and fragility of the lamps, and given the environmental concerns associated with breakage and/or crushing, these management issues are critically important. Detailed guidelines will give the industry the guidance that it needs to comply with the EPA's requirements and to minimize environmental risk.
RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., UW rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the release of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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.

These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or component of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

In the hazardous waste lamps final rule, EPA has determined that regulations applicable to accumulation of hazardous waste lamps should be consistent with the accumulation regulations applicable to all universal wastes (''273.15 and 273.35). Therefore, in today-s final rule, small and large handlers of hazardous waste lamps may accumulate hazardous waste lamps for up to one year as proposed, and an additional provision has been added to allow for accumulation for more than one year if such accumulation is solely for the purpose of accumulating such quantities of universal waste as are necessary to facilitate proper recovery, treatment, or disposal. For any

accumulation longer than one year, the handler must be able to prove that such accumulation is solely for accumulating quantities necessary to facilitate proper recovery, treatment, or disposal (it is assumed that any accumulation up to one year is for this purpose).

The final rule for hazardous waste lamps does not require a manifest to accompany a shipment but the generator may use a manifest if he so chooses. The Agency has decided to retain the current tracking requirements in Subpart D of Part 273 for hazardous waste lamps. Under the universal waste system, hazardous waste manifests need not accompany off-site shipments of universal waste. Transporters of universal wastes must, however, comply with any applicable Department of Transportation (DOT) requirements. Small quantity handlers are not required to keep records of shipments of universal waste lamps. Large quantity handlers must track waste lamp shipments by maintaining records documenting shipments received by and sent from the facility. These records may take the form of a log, invoice, manifest, bill of lading, or other shipping document. The Agency believes that standard business records that are normally kept by businesses will fulfill this requirement. The Agency believes that these requirements provide consistency with the current universal waste rule.

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).

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-00188
COMMENTER Westinghouse Electric Corporation
SUBJECT UNWAS6
COMMENT Training (page 38303): Sections 273.31(f)3) and 273.33.(d)(3) should clarify that this regulation only applies to employees

associated with the management of lamps. Otherwise, documentation of this training would be burdensome because of the administrative costs.

RESPONSE

The universal waste regulations do not require formal training for facility employees, but does require that employees at large quantity handler facilities are thoroughly familiar with proper waste handling and emergency procedures related to their responsibilities, and employees at small quantity handler facilities be informed of the proper handling and emergency procedures appropriate to the types of universal waste being handled. The Agency believes that a basic employee training requirement is necessary to ensure that employees are specifically familiar with waste handling procedures. Training that is required under other programs (e.g., OSHA, RCRA Subtitle C) will most likely meet the Part 273 training requirements.

DCN FLEP-00304
COMMENTER A&K Service Corporation
SUBJECT UNWAS6
COMMENT Another concern of our company is that there is no mention in the exclusion on crushing of these lamps and it is prohibited by the universal waste approach. We believe that it is oftentimes more practical to crush these lamps on the generators site and transport the material to a subtitle D disposal site or a recycler. Another option is to allow controlled crushing of these lamps off-site. We believe it is more manageable to handle this material after it is crushed rather than attempt to package it properly for storage and transport.

RESPONSE

Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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 hazardous waste 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-00306
COMMENTER Lighting Maintenance and Service, Inc.
SUBJECT UNWAS6
COMMENT Another issue with the universal waste disposal which causes concern is that it prohibits lamp crushing and the exclusion is silent on it. We believe that a practical approach to lamp disposal will require crushing lamps on the generators site and transporting the crushed material to either subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by 90% and consequently reduces transportation and storage costs. Crushing can be done safely with proper management. We advocate provisions for safe, on-site (and for flexibility; off-site) crushing in compliance with OSHA mercury standards be included in the conditional exclusion.

RESPONSE
Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00196
COMMENTER American Lighting Association
SUBJECT UNWAS6
COMMENT Air emissions due to breakage can be controlled through proper handling and packaging practices, and, as indicated earlier, the regulatory provisions should address crushing of lamps.
RESPONSE
Today=s final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. Hazardous waste regulated as universal waste are subject to streamlined waste management standards. These standards require that universal waste handlers manage universal waste lamps in a way that prevents releases of the lamps or components of the lamps to the environment. Hazardous waste lamps must be stored in containers and/or packaging that remain closed, are structurally sound, are adequate to prevent breakage, are compatible with contents of lamps, and that lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. Handlers also must contain any universal waste lamps that show evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous waste to the environment. If a release occurs, handlers of universal waste must

immediately contain all releases of universal waste and any residues from universal wastes. In addition, universal waste handlers must determine whether any material resulting from a release is a hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable provisions of 40 CFR parts 260 through 272.

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).

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-L0001
COMMENTER Environmental Technology Council
SUBJECT UNWAS6
COMMENT Further, perhaps the greatest problem regarding fluorescent lamps in the MSW stream occurs before the lamps are even placed in the landfill. There is no protection against breakage of lamps in the current solid waste transportation system. In fact, it can be assumed that nearly all lamps transported in garbage trucks are broken and mercury released to the environment before the lamps even reach the landfill. [26] [Footnote 26: Risk Assessment, p.156.] There is further opportunity for breakage at collection and storage points, if any. Finally, any lamps that reach the landfill still unbroken are likely to get broken in handling and crushing at the landfill site, again allowing vaporization of the mercury and its release to the atmosphere.
RESPONSE
EPA agrees with the commenter that the greatest threat of mercury emissions occurs in storage

and transport. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards). Facilities that generate universal waste and consolidate universal waste (but do not treat or dispose universal waste) are subject to the regulations for universal waste handlers. The universal waste rule ensures that mercury emissions and the releases of other hazardous waste constituents are minimized during all stages of lamp management. The universal waste 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. Hazardous waste lamps ultimately must be recycled or treated and disposed at a RCRA Subtitle C facility.

The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment to prevent potential mercury emissions and the release of other hazardous waste constituents during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.

DCN FLEP-00303
COMMENTER IllumElex Corporation
SUBJECT UNWAS6
COMMENT The universal waste approach prohibits the crushing of lamps and the exclusion does not address it. We believe that sometimes it is more feasible to crush the lamps versus a large bulk shipment. With proper controls, crushing can be done safely thus reducing storage cost and transportation cost. IllumElex recommends that the conditional exclusion include provisions for safe on site crushing in compliance with OSHA mercury standards.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full

Subtitle C management standards).

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).

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-00236
COMMENTER Conservation Lighting, Inc.
SUBJECT UNWAS6
COMMENT We are particularly concerned that the universal waste disposal prohibits lamp crushing and the exclusion is silent on it. Conservation Lighting believes that a practical approach to lamp disposal often involves crushing the lamps on the generators site and transportation of crushed material to either subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by greater than 90% and thus, reduces the storage and transportation costs. Crushing can be conducted safely with proper controls. We have tried several times to contact disposal agencies within the three different States we operate in for proper disposal procedures and they are very apprehensive about the proper disposal procedures because of the potential liability involved and the inconsistency of regulatory. We strongly recommend that the conditional exclusion include provision for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow crushing at off-site storage

locations.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00199
COMMENTER National Association of Electric Dist.
SUBJECT UNWAS6
COMMENT Crushing. Our members are particularly concerned that the Universal Waste proposal prohibits lamp crushing and the exclusion is silent on it. We believe that a practical approach to lamp disposal often involves crushing the lamps on the generator's site and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the

volume of fluorescent lamps by greater than 90% and thus reduces storage and transportation costs. Crushing can be conducted safely with the proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to all w controlled crushing at off-site storage locations.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00192
COMMENTER Certified Maintenance Services, Inc.
SUBJECT UNWAS6

COMMENT We are particularly concerned that the universal waste disposal prohibits lamp crushing and the exclusion is silent on it. Our company believes that a practical approach to lamp disposal often involves crushing the lamps on the generators site and transportation of crushed material to either subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by greater than 90% and, thus reduces the storage and transportation costs. Crushing can be conducted safely with proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow crushing at off-site storage locations.

RESPONSE

The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00174
COMMENTER Illuminating Engineering Soc. of N. Am.
SUBJECT UNWAS6
COMMENT Crushing. It is of concern that the Universal Waste proposal prohibits lamp crushing and the exclusion is silent on it. A practical method of disposal often involves crushing the lamps at the generator's site and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by greater than 90% and thus reduces storage and transportation costs. Crushing can be conducted safely with proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow controlled crushing at off-site locations.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00165
COMMENTER Ohio Chamber of Commerce
SUBJECT UNWAS6
COMMENT Crushing. We are particularly concerned that the Universal Waste proposal prohibits lamp crushing and the exclusion is silent on it. Our members believe that a practical approach to lamp disposal often involves crushing the lamps on the generator's site and transporting the crushed material to either Subtitle D disposal or to a recycler. Crushing reduces the volume of fluorescent lamps by greater than 90% And thus reduces storage and transportation costs. Crushing can be conducted safely with the proper controls. We strongly recommend that the conditional exclusion include provisions for safe, on-site crushing in compliance with OSHA mercury standards. For purposes of preserving flexibility, it may also be advisable to allow controlled crushing at off-site storage locations.
RESPONSE
The Agency does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

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).

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-00091
COMMENTER Sterling Environmental Services, Inc.
SUBJECT UNWAS6
COMMENT Comment was also requested on the prohibition of intentional breakage of bulbs. The generators that crush bulbs seem to be doing it as a cost savings for disposal. The issue of mercury exposure from crushing the bulbs has typically been addressed by OSHA standards. Many generators have installed mercury capturing devices for fugitive mercury emissions.
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 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).

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.

In addition, the universal waste rule is expected to result in cost reductions over Subtitle C management requirements for generators, collectors, and transporters, yet it ensures that lamps are managed in an environmentally protective manner and are properly recycled or treated at Subtitle C facilities prior to disposal.

DCN FLEP-00136
COMMENTER Wisconsin Dept. of Natural Resources
SUBJECT UNWAS6
COMMENT First, we strongly support the option of including waste mercury-containing lamps in the proposed Universal Wastes Rule. If the USEPA continues to consider the exemption option, then only the recycling portion, with strong documentation requirements, should be considered. We do not believe that present USEPA regulations have adequately addressed the concern about mercury releases to the environment from the management and disposal of mercury-containing waste lamps, such as mercury- and sodium-vapor, fluorescent and neon lights. While the concentrations of mercury from landfills may be low, the long-term impact of these emissions can be significant. In addition, we do not believe that the USEPA has fully and adequately considered that most mercury-containing lamps are so fragile that they will not arrive at a landfill intact, let alone survive in a landfill cell intact. We believe that most waste mercury-containing lamps would be broken in dumpsters and other trash receptacles if the USEPA pursues the exemption approach (i.e., exempting mercury-containing lamps from hazardous waste regulations and allowing them to be disposed in Subtitle D landfills or recycled). When these lighting wastes are broken in trash receptacles, we believe a significant quantity of the contained mercury can be expected to be released at that point as well as in garbage trucks, rather than landfills. These non-point emissions sources and subsequent random depositions of mercury- contaminated materials should be carefully evaluated.
RESPONSE
The Agency agrees with the commenter and does not believe that its proposed conditional exclusion approach would sufficiently protect human health and the environment. EPA gave considerable weight to actions that would minimize mercury emissions to the environment while encouraging the collection and environmentally-sound management of spent lamps. Based upon commenter input and additional information collected and reviewed by the Agency since the publication of the proposed rule, EPA decided to adopt the proposed universal waste approach

for controlling potential risks from the management of spent hazardous waste lamps. Today's final rule adds hazardous waste lamps to the universal waste regulations under 40 CFR Part 273. The universal waste rule provides a reduced, or streamlined set of requirements (i.e., universal waste rule is less stringent than full Subtitle C management standards).

The Agency is clarifying that all waste lamps exhibiting a hazardous waste characteristic for mercury or any other hazardous constituent fit the definition of hazardous waste lamps. Examples of common hazardous waste lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps. Spent lamps that do not exhibit any hazardous waste characteristic are not subject to Subtitle C regulation or universal waste management regulations. In addition, at a federal level, conditionally exempt small quantity generators (CESQGs) can continue to manage their hazardous waste lamps under the current 40 CFR 261.5 or under the universal waste program, whichever they prefer.

The commenter=s input agrees with studies conducted by the Agency which indicate that the greatest potential for mercury emissions from spent lamps occurs during storage and transport. Uncontrolled crushing and breaking of lamps allows mercury to be emitted into the air. The Agency is convinced that the requirements of the universal waste program can be highly effective in mitigating risks posed by spent lamps during storage and transport. The universal waste requirements for proper packaging and handling of the lamps to avoid breakage during accumulation and transport can prevent releases of mercury to the environment before recycling or other management. The universal waste rule both establishes packaging standards, as well as a prohibition on treatment, to prevent potential mercury emissions during storage and transport. In addition, universal waste transporters remain subject to applicable DOT requirements for the transport of universal waste lamps.