



**Fluorescent Lighting Product Stewardship Dialogue  
Stakeholder Meeting #1  
Meeting Summary  
Salt Lake City, Utah  
April 23-24, 2008**

**ATTENDEES**

The meeting was attended by 24 participants, with another 25 participants using a conference call dial-in number over the course of the two-day meeting. The final participants list is on the PSI website at [www.productstewardship.us/FluorescentLightMeetingSaltLakeUT](http://www.productstewardship.us/FluorescentLightMeetingSaltLakeUT).

**MEETING MATERIALS**

This meeting summary, the final agenda, PowerPoint presentations, and other materials are posted on the PSI website at: [www.productstewardship.us/FluorescentLightMeetingSaltLakeUT](http://www.productstewardship.us/FluorescentLightMeetingSaltLakeUT). The PowerPoint presentations should be consulted for details when reviewing this meeting summary. Most of the information in the PowerPoint presentations is not repeated here.

**DAY 1 – WEDNESDAY, APRIL 23**

**WELCOME AND INTRODUCTIONS**

Scott Cassel (PSI) opened the meeting by welcoming the group and thanking Rusty Lundberg of the UT Department of Environmental Quality (UT DEQ) for his help in setting up the meeting in Salt Lake City. Bill Sinclair, Deputy Director of the UT DEQ welcomed the group with his reflections on Utah's environmental issues and unique culture and landscapes. Scott also extended his thanks to the U.S. Environmental Protection Agency (U.S. EPA) Region 8 for funding this dialogue meeting, as well as PSI's pilot retail collection project in Utah, South Dakota, and Montana. In addition, Scott recognized the meeting sponsors – UT DEQ, Veolia Environmental Services, and the National Electrical Manufacturers' Association (NEMA) – which provided meals and refreshments.

Participants (in the room and on the phone) introduced themselves by giving their name, affiliation, and primary interest in the issue of fluorescent lighting. People indicated an interest in increasing recycling rates, developing a sustainable financing system, consumer education, reducing toxicity/improving human health, and the importance of promoting energy efficient lighting.

**OVERVIEW OF PSI DIALOGUE PROCESS, GOALS, AND MEETING OBJECTIVES**

Scott Cassel (PSI) presented general information about PSI, but focused mainly on the proposed issue statement and goals in the *Fluorescent Lighting Product Stewardship Action Plan*. He also outlined the anticipated “road map” of four national dialogue meetings. Each meeting will build

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on the previous one so that the four meetings will be part of a single process resulting in joint agreements developed collaboratively by all participants. Scott presented a definition of “consensus” and spoke about the importance of each stakeholder participating in good faith. He proposed that those participating in the national dialogue not be precluded from working on legislative initiatives. However, the key will be for dialogue participants to develop a solution that satisfies the interests of all stakeholders so that no one feels the need to introduce more aggressive measures unilaterally.

Participants made the following comments about the proposed dialogue goals:

- Different types of bulbs have varying amounts of mercury.
- Households use both compact fluorescent lamps (CFLs) and linear fluorescents; it is important not to equate CFLs solely with residential and linear fluorescents solely with commercial uses.
- Production issues are not explicitly included in the general goal statement, although it is mentioned in the specific goals statement. Also, the general goal does not mention toxic materials used in lamps (for example lead in solder). Scott mentioned that the general and specific goals should be considered as one statement, and asked if there is anything that should be included that is not now included in both statements.
- The goal should make a clearer connection to human health, not only environmental impacts of mercury release.
- The goal should also include a specific reference to manufacturing, including the environmental justice issue of worker safety overseas.
- Lamp breakage is a concern during storage and transport to the recycler.
- Should tanning bed lamps, neon lamps, and sporting arena lighting be included in the scope? While these are narrow in scope, they all have high mercury content.
- The ultimate fate of the mercury once it is collected and reprocessed is a concern.
- In addition to diverting materials from municipal solid waste (MSW) disposal, it is important to reuse as many materials as possible.
- The quality of recycling facilities varies.
- Reducing mercury used in lamps and/or released to the environment is key; ultimately the group would like to see mercury eliminated from lighting, and manufacturers said they are working on alternative technologies.

## **PRESENTATIONS**

### **Michael Bender, Mercury Policy Project (MPP)**

Michael presented information about the mercury content of different lighting products, how mercury gets released to the environment, global demand for mercury, mercury production in China, mercury lamp use and mercury release in the U.S., and the elements of a sustainable lighting policy. He noted that when the price of gold rises, mercury use for small-scale gold mining grows as more people go into this business. There was some discussion on whether or not there is a correlation between lamp life and mercury content. Joe Howley (GE) confirmed that there is no intrinsic correlation –lamps with different life expectancies can have the same mercury content. However, since mercury is slowly absorbed as the lamp is used, more mercury is required to lengthen the lifespan of a single type of lamp.

### **Jennifer Dolin, Osram-Sylvania (presenting for NEMA)**

Jennifer presented information on the different types of fluorescent lamps and manufacturing processes, the function of mercury in lamp manufacture, and the amount of mercury in lamps. She noted that the results of a new survey on mercury contained in fluorescent lighting will be posted on the NEMA website soon. There was discussion of the mercury released during manufacture and associated concerns about worker safety. Most NEMA manufacturers (including Philips, Osram-Sylvania, and GE) comply with ISO 14001 standards and make all the linear fluorescents sold into the U.S. market in NAFTA countries. These companies also have cooperative agreements with Chinese manufacturers that incorporate the ISO 14001 standards. She could not speak to the standards used by Chinese manufacturers who are not required by their U.S. customers to abide by ISO or other environmental and worker safety standards. In comparing fluorescent lamps to incandescent, several participants wanted to see the amount of mercury lost during manufacture of fluorescent lamps included in the comparative bar chart.

### **Scott Thibodeau, Veolia (presenting for ALMR)**

Scott presented on behalf of the Association of Lighting and Mercury Recyclers (ALMR). He covered the lamp recycling process, the extent of lamp recyclers in the U.S., and the concerns of manufacturers, retailers, and recyclers. He noted that ALMR and NEMA are working together to consolidate lamp recycling statistics to have more reliable data on recycling rates. The infrastructure for lamps used by businesses is in place, but recycling would be enhanced if more states enacted disposal bans and enforced those bans. Recyclers look to EPA and government agencies to develop best management practices (BMP) on lamp handling. Recyclers are also working on new technology to process CFLs more efficiently, which will reduce costs when implemented. Finally, Scott noted that lamps that are collected have little value, unlike electronics that can be sold for scrap value.

### **John Essman, Ace**

John shared the reasons why Ace stores are participating in retail collection of spent lamps around the country. Ace is participating in collections at over 350 stores in Colorado, Wisconsin, Illinois, Vermont, and New Hampshire. In addition, Ace is participating in a pilot collection project being conducted by PSI in Montana, Utah, and South Dakota. Retailers can provide a convenient place to recycle for residents. Accepting lamps also builds on Ace's theme of being a "Helpful Place" for community needs. It also brings traffic into the store, which can translate into more sales. Ace works with utilities in a number of areas on programs to promote CFLs. He said that he was able to significantly reduce lamp breakage by having staff accept the lamps from customers and place them into the storage containers.

## **DISCUSSION OF ISSUES**

### **Issue #1: Source control**

Sierra Fletcher (PSI) presented a brief overview of the issue, which is included in the PSI presentation on the meeting website (see above). Under the key issue of source control, the group discussed the amount of mercury in different products, the transition to efficient lighting products that do not contain mercury, procurement standards, and other issues. The following comments were made:

- Manufacturers are working hard to reduce mercury in lamps, and they hear the message clearly from customers that this is a priority. They recommend that everyone promote the

transition from T12 lamps to the more efficient (lower mercury) T8 lamps. It takes time to change manufacturing processes, and manufacturers ultimately produce based on market demand. A company like Osram-Sylvania makes 5,000 types of lamps. One cannot say that one company's products are lower in mercury than another company's products across all product lines (Jennifer Dolin, Osram Sylvania).

- Low-mercury products may pass TCLP, but still release mercury (Alex Pashley, UT DEQ), which can be released if broken in transport and at disposal facilities (Becky Lockart, IL EPA).
- Major manufacturers have lost the CFL market; Philips invented the CFL but can no longer compete in the CFL market. Therefore, Philips is focusing on the manufacture and promotion of LEDs as a new technology and not advances in CFLs. (Ric Erdheim, Philips). Ric brought to the meeting a sample of a new 6W LED that can replace a 40W incandescent with a lifespan of 50,000 hours. LEDs can replace some CFLs, but linear fluorescents are likely to be the last type of fluorescent lamp to be replaced by newer technology (Ric Erdheim, Philips).
- Lamp manufacturers have agreed to comply with the European RoHS guidelines in CA by 2010, which will affect the whole U.S. market (Ric and Jennifer).
- NEMA has developed a paper on CFLs "popping," or otherwise malfunctioning (Jennifer Dolin, Osram Sylvania).
- Some of the market share being lost by the major lamp manufacturers may be to companies that have greater environmental impacts during manufacture. A few years ago when Chinese companies started making CFLs, some used the EnergyStar logo even though they were found not to be compliant (Ric Erdheim, Philips).
- The next version of the EnergyStar criteria go into effect on October 1, 2008, and will include NEMA's 5mg limit/25W CFL (Jen Dolin, Osram Sylvania). The U.S. Department of Energy is in the rulemaking phase to further regulate the efficiency of linear fluorescents (Ric Erdheim, Philips).
- The Green Purchasing Institute is working on procurement as part of a Green Lighting Campaign. Alicia Culver is helping states develop model procurement policies (Michael Bender, Mercury Policy Project). Procurement is very complex when you incorporate the many aspects of lighting efficiency, dosing, whether or not there is a take-back mechanism, and other aspects (Eric Uram, Headwater Consulting).
- We need more information on the mercury released during manufacturing and how this differs by manufacturer. Producer responsibility encourages manufacturers to reduce mercury content by making them financially responsible for collecting and recycling the spent lamps. There is an obligation to eliminate the impacts of the products we use, even if those impacts occur overseas (Suellen Mele, Washington Citizens for Resource Conservation).
- Should neon lamps (designed by artists) and other types of lamps be included in the dialogue? While these are a small percentage of the lamps, some can contain large amounts of mercury or other toxins (Terri Goldberg, NEWMOA).
- We need to have clear messaging that low-mercury lamps should be recycled.

The group identified five potential strategies under this key issue:

- 1) Conduct further research into mercury use/release in manufacturing from different companies, in particular TCP as the major CFL manufacturer. Research manufacturers, market share, and manufacturing locations.

- 2) Verify/enforce the use of EPA's EnergyStar logo by lamp manufacturers.
- 3) Manufacturer disclosure and verification of the mercury content of different lighting products.
- 4) Develop a model procurement policy (Mercury Policy Project is already working on this).
- 5) Promote energy efficient, non-toxic lighting technology.

None of these strategies was identified as a top priority for work between meeting #1 and meeting #2. However, the Infrastructure Study Workgroup will conduct further research to better understand the lamp manufacturing locations and issues related to mercury release. Until this information is provided, participants will not know what level of priority to assign to this issue.

Scott made it clear that the group was prioritizing the top strategies on which to work between meeting #1 and meeting #2. If it wanted, the dialogue group could come back to other lower priority items following meeting #2 or meeting #3. Since all participants have limited resources (including time), it is important to focus on the top priorities for now. The group will follow a parallel track – working on the most promising strategies first, while still considering more difficult strategies that are deemed important.

### **Issue #2 (“Small”): Collection, consolidation, and transportation infrastructure for recycling of lamps from *small* generators**

Sierra Fletcher (PSI) presented a brief overview of the issue, which is included in the PSI presentation on the meeting website (see above).

#### ***Definition of “small”***

The group discussed whether “small” generators should be defined by the following three ways: (1) regulation (whether regulated under EPA's Universal Waste rule or not regulated, although it varies greatly across states); (2) use (residential vs. commercial); or (3) amount and type of lamps collected for recycling. Consensus was reached that, for the purpose of the dialogue, “small” would refer to generators with only a few lamps (including both CFLs and linear fluorescents) to recycle at one time. There are liability concerns with collecting lamps from regulated generators.

#### ***Key relevant issues and comments on potential strategies***

- EPA is interested in promoting the recycling of lamps from all generators, even if the generator of the lamp is not regulated. Large retailers have expressed concern about their liability as a larger generator and how the collection of lamps would affect their generator status. EPA cannot waive liability, but it wants to work with retailers to address liability concerns to promote recycling (Linda Barr, U.S. EPA).
- Retail collection is the backbone to having a convenient collection infrastructure (Sego Jackson, Snohomish County). There was a general consensus from the group that retailers formed the anchor to an effective collection system to provide consumer convenience in urban/suburban/rural areas.
- It is critical to have retailers participate in the dialogue (many participants).
- We need a mix of collection locations, including retail, post offices, household hazardous waste (HHW) facilities, and other venues (Linda Barr, U.S. EPA).

- It is important to have a collection system that does not require consumers to make an extra trip in their car; it should be based on places to which they are traveling anyway. There is a need to consider what is convenient for a wide range of people (Linda Barr, U.S. EPA; Sejo Jackson, Snohomish County; and Jennifer Dolin, Osram Sylvania).
- Collect lamps where the new bulbs are sold, which should include groceries and pharmacies and not just hardware stores.
- One problem with collecting lamps solely at HHW facilities is that it sends the message that these lamps are dangerous (e.g., must be collected at a hazardous waste facility). It is important to consider messaging on end-of-life recycling options while promoting the use of CFLs as the most efficient current lighting option (Sejo Jackson, Snohomish County).
- Financing is a factor in establishing the collection infrastructure. If stores get reimbursed, they may be more interested in participating as a collection site (Suellen Mele, WCRC).
- 62% of CFLs are sold at large retail outlets (Jennifer Dolin, Osram Sylvania).
- We need a better understanding of the perspectives of large and small retailers; this is a missing stakeholder group. There may be near-term opportunities to work with the retailers who are already receptive (Michael Bender, MPP).
- Conducting pilot projects can have a legislative impact; some legislatures may want to wait for the pilot to be completed before solving the problem on a comprehensive level.

The group identified two strategies for consideration during the dialogue process:

- 1) Conduct additional research (e.g., an **Infrastructure Study**) on existing collection programs to determine the following:

#### General Research Needed

- a) Consumer lamp sales breakdown: Percentage sold at groceries, pharmacies, hardware stores, large retailers, etc. and number of sales locations these represent.
- b) GIS mapping of existing and potential future collection locations with overlays – national. This could include a map of existing collection locations and potential new sites that would include postal service locations, retail, etc.
- c) Logistics of different existing collection methods, including program costs and potential for savings (cost effectiveness).

#### Retail Collection

- a) Identify obstacles to retail collection from all points of sale and determine ways to overcome those obstacles (including through existing programs). The study could also catalogue the list of retail concerns and whether and how those concerns were overcome. Consider the potential for financial incentives/collection reimbursement to increase retail collection interest.
- b) Determine the costs and logistics of retail collection.

#### Lamp Breakage

- a) Study extent of lamp breakage through various transportation methods from end user to recycler.
- b) Compare various packaging and shipping techniques.
- c) Compare lamp breakage in self service collections vs. handing to service employee.
- d) Develop/promote BMPs for handling/storage, collection, and transport.

- e) Consider whether the EPA study needs to be supplemented.
- 2) Conduct a **Demonstration Project** in one or more states or counties that models an effective collection system based on an existing program. The project would test different aspects of an effective lamp collection and recycling system. The test area would target geographic locations that already have a disposal ban, retail collection efforts, and other aspects that provide a good foundation for a successful effort. Details of the Demonstration Project could include the following:

Develop an effective collection system using an existing program.

- a) Start with state/county with disposal ban, retailer collections (mandatory or voluntary), etc.
- b) Determine baseline collection percentage (agree on methodology for determining rate).
- c) Determine collection performance goal.
- d) Develop a comprehensive collection program that establishes the collection anchor through retail and includes other locations to meet consumer convenience and performance targets.
- e) GIS mapping of existing and potential future collection locations with overlays.
- f) Definition of “convenience”/# of collection sites needed per population.
- g) Map retail locations => determine if this meets the definition of convenient.
- h) Add collection locations (e.g., mail back from homeowner, post offices, HHW sites, libraries, etc.) to meet convenience target.
- i) Consider adding a collection incentive payment for collectors to determine effect.
- j) Consider adding a financial incentive for the consumer to determine effect.
- k) Add a comprehensive consumer education campaign to determine effect.
- l) Promote environmentally preferable lighting.
- m) Evaluate program performance and adjust as needed.

Of these two strategies, the first strategy, the Infrastructure Study, was identified as a priority for follow up between meeting #1 and #2. PSI established an Infrastructure Study Workgroup and participants volunteered for this work group (see below for the participant list).

**Issue #2 (“Large”): Collection, consolidation, and transportation infrastructure for recycling of lamps from large generators**

Sierra Fletcher (PSI) presented a brief overview of the issue, which is included in the PSI presentation on the meeting website (see above). The group moved quickly from discussing the infrastructure for recycling from large generators to the enforcement of, and compliance with, regulations, which is variable across states. There was agreement that our goal should be to drive commercial lamps into the existing collection infrastructure.

***Lamp crushing***

Lamp crushing is a form of treatment that can reduce the volume of material transported for recycling. Terri Goldberg (NEWMOA) noted that lamp crushers, or drum top crushers (DTC) as they are also known, should be regulated as a treatment facility under the Resource Conservation and Recovery Act (RCRA). Some states in the Northeast ban lamp crushers, while others require that they operate with a hazardous waste permit. The units are also very expensive and are not

likely to be viable for small businesses; many lamp generators, however, are conditionally exempt small quantity generators. Allison Watanabe (U.S. EPA) added that the Association of Lighting and Mercury Recyclers (ALMR) has a chart showing states and their regulations regarding DTCs. She also mentioned that U.S. EPA has developed best management practices for the operation of DTCs. Ric Erdheim (Philips) added that some ALMR members support lamp crushing, while others oppose it. Michael (MPP) added that filters need to be changed often. Rusty Lundberg (UT DEQ) noted that Virginia worked with AirCycle to study DTC safety because of concerns about the EPA's conclusions on the issue. Participants requested that a summary of the lamp crushing issue be developed.

Dialogue participants identified one strategy related to the recycling infrastructure for large generators – add collection locations, distributors, wholesalers, and consolidation points to the recycling facilities in the ALMR map of recyclers to show the extent of the infrastructure. However, this strategy was not chosen as a priority for work between meetings #1 and #2.

### **Issue #3 (“Small”): Information and motivation for recycling from *small* generators**

A brief overview of the issue was presented by Sierra Fletcher (PSI), which is included in the PSI presentation on the meeting website (see above).

#### ***Labeling***

Sandra Keil (Earth911) mentioned that motor oil containers include the Earth911 website. The NEMA site ([www.lamprecycle.org](http://www.lamprecycle.org)) also links to Earth911 (Mark Kohorst, NEMA). EnergyStar is a consistent messaging campaign, and includes recycling information in the “Change a Light” campaign. One suggestion was to change the current labels on lamps to make them consistent regarding public education about where to recycle the lamps.

Participants made the following comments:

- It is important to have a collection/recycling infrastructure in place before a major public awareness campaign encouraging recycling (Abby Boudouris, OR DEQ).
- Once the recycling infrastructure is in place, a program could do a massive outreach campaign that provides a small number of large incentives, as in a raffle (Sego Jackson, Snohomish County).
- It is important to conduct due diligence on any recycling services that are recommended or endorsed by such programs as EnergyStar (Suellen Mele, WCRC and Sego Jackson, Snohomish County).
- In WA's Take it Back Network, consumers pay an end-of-life fee when dropping off lamps for recycling (Suellen Mele, WCRC).
- Providing financial incentives is a challenge since the cost per pound of mercury removed is already pretty high (Vicki Calwell, consultant to EPA's EnergyStar).
- In CA, retailers charge a fee for recycling but provide coupons off the purchase of items in the store for those who bring their lamps to recycle (Ric Erdheim, Philips).
- Retailers that require consumers to pay an end of life fee but also offer coupons may be providing an interim strategy, but lamp recycling ultimately needs to be “free” for the consumer (Tom Metzner, CT DEP; Lauren Cole, King County WA).
- A deposit system should be considered as a viable long-term incentive.
- A retailer in British Columbia has developed a program called “Changes.” Under this

program, participating stores have a walk-through recycling center at the store entrance. Customers receive “points” for recycling which can be used for discounts in the store (Suellen Mele, WCRC).

- The VT DEC surveyed customers who had recycled their lamps at Ace and TrueValue stores: 64% learned of the recycling opportunity through in-store posters, and 68% said they would pay a 50 cent fee/lamp for recycling (Terri Goldberg, NEWMOA).
- Disposal bans (or recycling requirements) are needed to send the message that lamps should be recycled. Some states, however, find it politically difficult to pass a disposal ban. A waste management program should consider establishing a ban on commercial lamps first, followed by a ban on residential lamps. Disposal bans should consider having an implementation delay until the collection infrastructure is in place. Local ordinances that ban lamps from disposal can build momentum for a state ban (Michael Bender, MPP; Rusty Lundberg, UT DEQ; Eric Uram, Headwater Consulting; Sego Jackson, Snohomish County; and Theresa Stiner, IA DNR).
- Waste haulers should let their customers know that they will not accept lamps for disposal. It should be part of the waste industry’s best management practices.
- The release of mercury into the environment occurs when it is in transit (Terri Goldberg, NEWMOA).

The group identified the following potential strategies:

- 1) Conduct a public education/awareness campaign, including a change in lamp labels. Focus education at retail outlets. Develop clear and consistent messaging on the need to buy energy efficient, low-mercury bulbs, and to recycle them.
- 2) Increase the number of states and local governments that have disposal bans, and identify what is necessary for adequate enforcement and compliance. Learn from leading states and counties that have successful bans and educate legislators about them. Promote waste management company policies not to accept lamps for disposal.
- 3) Promote financial incentives to recycle (coupons, cash bounty, etc.).

The second strategy, “Bans/Enforcement,” was identified as a priority issue for which a workgroup was developed between meetings #1 and #2. The Bans/Enforcement Workgroup will address both small and large generators.

### **Issue #3 (“Large”): Information and motivation for recycling from large generators**

Sierra Fletcher (PSI) presented a brief overview of the issue, which is included in the PSI presentation on the meeting website (see above). The group discussed issues related to enforcement and compliance as the key “motivation” that large generators need to recycle lamps.

#### ***Regulated community***

Many large building managers generate a significant amount of spent lamps but not other types of Hazardous Waste. These generators include hospitals, institutions, and schools, many of which contract with lamp distributors or wholesalers for lighting services (Ric Erdheim, Philips; Michael Bender, MPP; Terri Grover, NEWMOA; and Scott Thibodeau, Veolia).

Participants made the following comments:

- Enforcement will be key to increasing the recycling rate from commercial generators (Lauren Cole, King County).

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- We should focus our efforts on commercial generators since more lamps are generated from the commercial sector as compared to the residential sector (Michael Bender, MPP). This should be emphasized in the Action Plan.
- Building management organizations should be part of this dialogue if recycling of lamps from large buildings is a goal.
- Lamp disposal bans are in place in a number of states and counties. We could perform a case study comparing recycling rates from large generators in states and counties with disposal bans vs. states and counties without disposal bans (Michael Bender, MPP). We would need to establish baseline data. We could also test the effect of education and other factors in those states with the lamp disposal ban.
- Manufacturers have developed a methodology to determine a national lamp recycling rate based on assumptions about the number of lamps sold, lamp life span, and the amount recovered for recycling. However the calculation is difficult to conduct on a state level (Ric Erdheim, Philips). WA Department of Ecology (in the Cascadia report) has also developed a recycling methodology (Rob Rieck, WA Department of Ecology).
- Snohomish County WA has a long-standing lamp disposal ban in place. We could use Snohomish County to test the effect of increased education in an area with a lamp disposal ban already in place (Sego Jackson, Snohomish County).
- Best management practices need to be considered for the transport and handling of lamps, especially related to breakage (Terri Grover, NEWMOA). Becky Lockart (IL EPA) echoed concerns about breakage in transport.
- Washington Department of Ecology will conduct a waste characterization study to determine the number of lamps reaching landfills (Rob Rieck, WA Department of Ecology).
- There is a safety concern regarding waste management workers who are exposed to lamps that break in packer trucks, at transfer stations, and at landfills and incinerators. We should invite the Solid Waste Association of North America (SWANA) to join the dialogue (Michael Bender, MPP). NEMA, ALMR, and SWANA conducted a joint outreach effort to promote the safe recycling of lamps (Ric Erdheim, Philips).
- Waste haulers can play an important role in educating people not to dispose of lamps in MSW by putting signs on dumpsters and including information invoice statements (Scott Thibodeau, Veolia).
- State and local regulatory agencies typically will not enforce against a generator of lamps who has not complied until they have spent time bringing that generator into compliance with the law. If that generator continues to violate the law after a certain amount of time, agencies will then move to enforcement mode. In general, technical assistance (e.g., compliance assistance) precedes enforcement.
- The FL DEP provides technical assistance to generators and inspects small businesses every five years (Jack Price, FL DEP).
- NC DENR completed a study for the NC General Assembly that identified enforcement/compliance issues related to lamp recycling, strategies to overcome these issues, and cost estimates for compliance (Scott Mouw, NC DENR).
- Enforcement and compliance go hand in hand; technical assistance needs a strong enforcement message (Mark Kohorst, NEMA).
- Osram-Sylvania sells lamps through electrical distributors, which provide an opportunity to communicate information to end users (Jennifer Dolin, Osram Sylvania).
- There is confusion on the advice given by manufacturers about whether low-mercury

lamps, or lamps that pass TCLP, should be recycled (Michael Bender, MPP). Manufacturers recommend that all mercury-containing lamps from commercial sources be recycled, but not necessarily all residential lamps, since the infrastructure exists for commercial lamp recycling but not residential recycling (Ric Erdheim, Philips). Several participants wanted manufacturers to be more explicit that mercury-containing lamps from commercial sources *must* be recycled.

- We need to have separate communication/educational channels for residential vs. commercial lamp recycling. Commercial communication can occur via NAICS code (as is done in Florida). Manufacturers should also be actively communicating the need to recycle lamps, as should the distributors who are directly selling to end users.
- The EnergyStar certification for buildings should require the recycling of all mercury-containing lamps. The LEED standard for buildings already includes a lamp recycling requirement for all mercury-containing lamps. These standards are opportunities to communicate the importance of lamp recycling to large building operators (Jennifer Dolin, Osram Sylvania).
- Some states, like Utah, are not allowed to enact regulations that are more stringent than the federal requirements, so they could not implement a disposal ban if there is no federal ban (Rusty Lundberg, UT DEQ).
- Green tip lamps are manufactured by Philips.
- If it is legal to dispose of the lamps and that is cheaper than recycling, this will create a major barrier to recycling.
- States with regulatory limits cannot be more stringent than federal requirements.
- We need to focus on the enforcement of commercial lamp recycling, and to change the message that some hazardous waste regulators are giving that it is acceptable to dispose of lamps generated from commercial sources.

The group identified two potential strategies:

- 1) Clarify that *all* lamps should be recycled (commercial and residential), regardless of whether they pass or fail the TCLP test or other regulatory requirements.
- 2) Study the enforcement and compliance issues related to lamp disposal among large generators, and identify barriers to recycling and how to overcome those barriers. This could include reviewing/revising the guidelines developed by NEMA to promote lamp recycling.

The second strategy, “Bans/Enforcement,” was identified as a priority issue for between meetings #1 and #2. The Bans/Enforcement Workgroup will address both small and large generators.

#### **Issue #4: Sustainable Financing**

Participants stated their priority issues related to financing and identified areas where more information is necessary. A common statement was the need to separate systems for small and large generators. In general, the group did not believe that financing represented a barrier to the collection of lamps from large generators, since the infrastructure existed and they were required by law to recycle. However, they did discuss different financing models to consider for the convenient collection and recycling from small generators.

Key considerations:

- The group generally agreed that a more thorough presentation of financing models from Canada, Europe, and the U.S. is needed to facilitate discussion of the pros and cons of each type of system.
- Many utilities are already contributing funds for the collection of lamps during pilot projects. Most government and environmental participants considered utilities to only be an interim funding source, while some other participants thought they could play a more long-term funding role.
- We need to identify the most effective lamp recycling system possible to keep costs low, and then we can consider who will pay (Jennifer Dolin, Osram Sylvania).
- We should model the costs for collection, transportation, recycling, and education/marketing so we know the full cost of the financing needed.
- We should also analyze the costs of a mail back program, reverse distribution, and other models used in MA, VT, and other states. Compare these systems.
- We should use the public benefits charge that is added to the utility rate base as a potential funding mechanism (Ric Erdheim, Philips).
- We need to consider the impact of any financing mechanism on promoting energy efficient lighting (Ric Erdheim, Philips; Jennifer Dolin, Osram Sylvania).
- The costs of lamp recycling in a pilot or small-scale program will not be indicative of the costs of a large, ongoing program (Suellen Mele, WCRC).
- The costs for recycling mercury lamps can be spread out over the cost of all lamp types so that mercury lamps don't have to bear the full burden (Sego Jackson, Snohomish County).
- Increasing the cost of energy efficient lighting too much will discourage sales of these products, which we want to promote (Ric Erdheim, Philips; Suellen Mele, WCRC; others)
- The WEEE recycling law for electronics is a good model for lamps because of its visible fee to consumers (Ric Erdheim, Philips; Jennifer Dolin, Osram Sylvania).
- What is the breakdown in manufacturer sales between fluorescents and incandescents? (Sego Jackson, Snohomish County).
- The culture is changing as to what people will pay for recycling. Only 20% of CFLs sold in MA now have a subsidy at all. Prior to that, people would not buy them without a discount (Lori Segall, MA DEP).
- An interim approach could include utility funding, since utilities already promote the use of fluorescent, energy efficient lamps, and they benefit financially from those lamps. Maine and Vermont, among other states, now have funding from utilities. Utilities, however, promote CFLs but not linear fluorescents. That interim strategy could also consider the use of end of life fees, although these need to be limited since they penalize those who are doing the right thing. An interim approach would also include green procurement (like the EPEAT system for electronics) that would include take back. Utility funding is not sustainable because they represent scattered and inconsistent solutions. However, they can be a good conduit for communication to end users. (Several participants agreed with these statements.)
- Our major long-term financing goal should be to find out how to implement producer responsibility in the context of developing sustainable (Energy Star) lighting. This includes a lifecycle approach (Suellen Mele, WCRC).
- We should compare the effectiveness of existing financing systems.

- What is the impact of the new federal law on the purchase of environmentally preferable lighting?
- Advanced recycling fees (ARFs) offer an educational component since the consumer knows there is an added fee for recycling.
- ARFs increase the need for government bureaucracy since they collect and manage the funds. The WEEE directive is not an ARF since it is managed by an industry stewardship organization.
- The cost of a top notch marketing campaign should be included in the cost of the product in a new financing system.
- What level of financial incentive will be needed (e.g., coupons) to meet the performance goals.
- Manufacturers should commit to promoting energy efficient lighting *and* lamp recycling.
- Cost internalization means that the product price will go up, which also means that manufacturer competitiveness will go down (Ric Erdheim, Philips).
- Manufacturers' experience with the WEEE Directive is that we need to be careful about implementing state laws over national legislation. There are concerns with differences in how the WEEE was implemented in the European Union's member countries.
- If retailers are faced with either collecting or having an ARF, they will choose an ARF.
- The responsible entity in producer responsibility legislation is moving toward being the brand owner, or the entity that makes the first sale into a jurisdiction.

The strategy for this key issue revolved around conducting more research about existing lamp recycling financing systems in other countries, and about developing a chart of basic financing systems. A Financing Workgroup was created to gather and present information on the range of financing options at Meeting #2.

### **MISSING STAKEHOLDERS**

The group identified the following stakeholders who they felt should attend the second meeting. PSI contacted many of these groups prior to the first meeting, but will make a concerted effort to reach them again. Some participants will assist PSI in contacting these groups.

- international Association of Lighting Management Companies (NALMCO)
  - Lighting contractors in WA (Rob)
- Utilities in WA (Jeff, Linda, Allison)
- Energy Serviced Companies (ESCOs)
- Northwest Energy Efficiency groups (e.g., Oregon Energy Trust) (Abby)
- Large retailers in Washington State (Suellen)
- Building Owners and Managers Association (Allison)
- Solid Waste Association of North America (SWANA)
- National Solid Waste Management Association (NSWMA)
- CA Department of Toxic Substances Control (PSI)
- CA Integrated Waste Management Board (PSI)
- EPA Energy Star (commercial side) (Vicki)
- U.S. Postal Service (PSI)

### **POTENTIAL AGENDA ITEMS FOR MEETING #2**

The second meeting will be held at EPA Region 10 headquarters in Seattle on **July 15-16, 2008**.

*Product Stewardship Institute, Inc.*

*Fluorescent Lighting National Dialogue Meeting – Salt Lake City, UT*

*April 23-24, 2008 –Meeting Notes*

The group identified the following potential topics/presentations (in addition to reports back from the three Workgroups).

- MN Pollution Control Agency official to report on the state's mandatory utility financing requirement for collection/recycling.
- Earth 911 to present an overview of their internet and toll-free phone information system.
- Take it Back Network to outline the system in Washington state set up to collect lamps and other products at retail and other outlets.
- WEEE expert to provide an in-depth overview of the WEEE Directive.
- TCP on CFL manufacturing.
- Home Depot (Canada and U.S.), Ikea, Whole Foods, and Wal-Mart to present on the retail take back of lamps.
- Dane County, Wisconsin – enforcement and analysis of the county program that requires retailers to collect lamps.
- Report from MA DEP and CA state officials on the implementation of the MA and CA lamp recycling laws.

## **WORK GROUPS**

As described under the relevant key issues above, three work groups were established to conduct additional research and other efforts between the first and second meetings. The following individuals volunteered at the meeting, as listed below. Additional participants have signed up for the work groups since the meeting.

### 1) Infrastructure Study

- a. Becky Lockart
- b. Jeff Hunt
- c. Theresa Stiner
- d. Linda Barr
- e. Eric Uram
- f. Sego Jackson
- g. NEWMOA/IMERC
- h. Abby Boudouris
- i. Sandra Keil
- j. Jamie Silberberger
- k. Lauren Cole

### 2) Bans/Enforcement

- a. NEMA
- b. NEWMOA/IMERC
- c. Allison Watanabe
- d. Rusty Lundberg
- e. Michael Bender
- f. Alex Pashley
- g. Rob Rieck

### 3) Financing Options

- a. Suellen Mele

- b. Sejo Jackson
- c. Eric Uram
- d. Dorothy Adams
- e. Ric Erdheim
- f. Jennifer Dolin
- g. NEWMOA/IMERC
- h. Linda Barr
- i. Lori Segall
- j. EPA EnergyStar (via Vicki Calwell)