



Everything that you Wanted to Know About Drum-Top Crushers

But Were Afraid to Ask

**Rick Volpel
Oregon DEQ
503-229-6753
April 14, 2004**



Discussion Topics

- **History of lamp crushing**
- **Current regulatory status**
- **Types of crushers**
- **Reasons to crush and not to crush**
- **Available studies**
- **In the future.....**



Lamp Crushing History

- **Crushing or breaking of lamps before they were regulated as a hazardous waste**
- **The old “fan box”**
- **Development of controlled crushing devices**
- **Universal waste rule**





Current Regulations

- **Universal waste rule for lamps**
- **Universal waste lamp crushing interpretation**
- **Treatment of hazardous waste in tanks and containers**



Universal Waste and Crushing of Lamps

- **Universal waste rules gives states the option to allow the crushing of universal waste lamps**
- **EPA Region X does not support crushing of universal waste lamps**
- **Few states allow crushing of lamps as universal waste**



Crushing of Lamps as Hazardous Waste

- **Crushing of lamps is allowed when they are managed as hazardous waste**
- **Must be done in tanks and containers in a manner that does not release hazardous constituents into the environment**



Wastes Not Subject to Universal Waste Processing Restrictions

- **Household hazardous waste**
- **CESQG hazardous waste**
- **May be subject to state and local requirements**



Types of Lamp Crushers

- **Dextrite**
- **Bulb Eater**
- **The “Other Bulb Eater”**
- **Recycling Technologies**



Dextrite

- **Seven models**
- **Has significant test data**
- **Estimate costs to crush lamps is \$0.16 - \$0.26 per lamp**





Bulb Eater

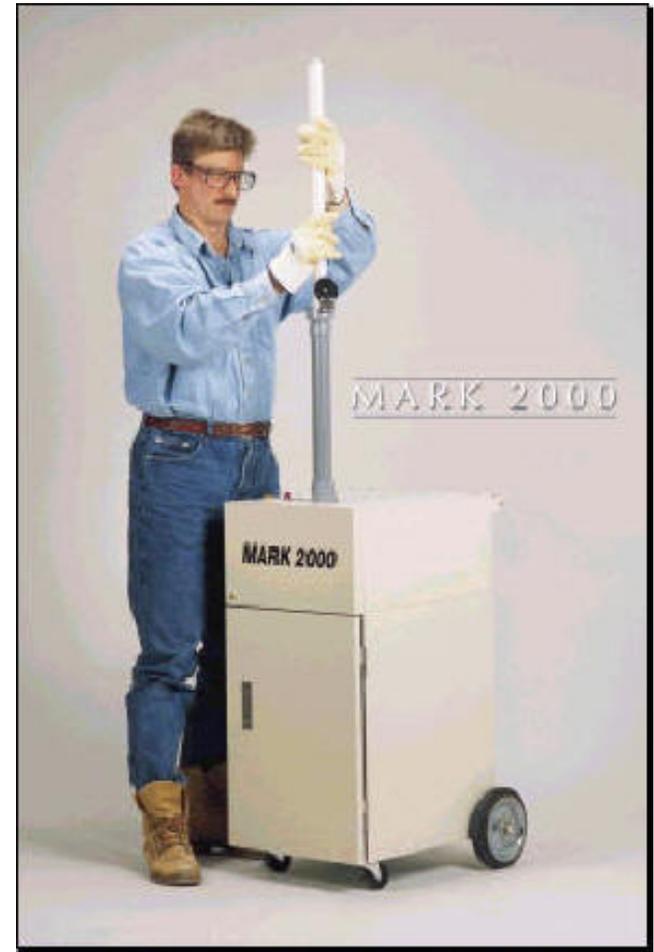
- **Produced by Air Cycle**
- **2 models**
- **Charcoal filter life ~1M lamps**





The “other” Bulb Eater

- **Manufactured by Environmental Disposal Concepts, Inc.**
- **Two models**
- **Lamps are collected in plastic bag**
- **~ 60 lamps per bag**





Resource Technologies

- **One model offered**
- **85 lb charcoal filter**





Reasons to Crush

- **Volume reduction**
- **Waste consolidation**
- **Perception that it is the right thing to do**
- **Belief that crushed lamps are non-hazardous**



Reasons not to Crush

- **Universal waste regulations do not support crushing**
- **Added management costs**
- **Potential exposure to mercury**
- **May be difficult to recycle/dispose of waste**
- **Additional space is needed for the crusher operation**



California Summary

- **Main advantage is less storage space is needed**
- **No significant cost savings using DTC**
- **Use of DTC may reduce fugitive Hg releases**
- **DTCs need to be continuously monitored**
- **DTC ability to control emissions to OSHA standards questioned**
- **Not all lamp recyclers able to process crushed lamps**



Minnesota Study Summary

- **During operation, DTC “approached” MN-OSHA 8hr exposure limit**
- **DTC control of Hg vapors do not compare with larger recycling units**
- **Can expose people to hazardous Hg vapor concentrations**
- **MPCA does not support the use of DTC**



Minnesota Study Summary

Hg exposure “likely” depends on the following factors:

- Number of lamps crushed**
- Duration DTC is operated**
- Ventilation in the area DTC is used**
- Proximity of people to DTC operation**
- Crusher location**



In the Future.....

Waiting for the results from the EPA study:

- Do crushing units control mercury adequately?**
- Will states be allowed to regulate DTC for universal waste lamps?**